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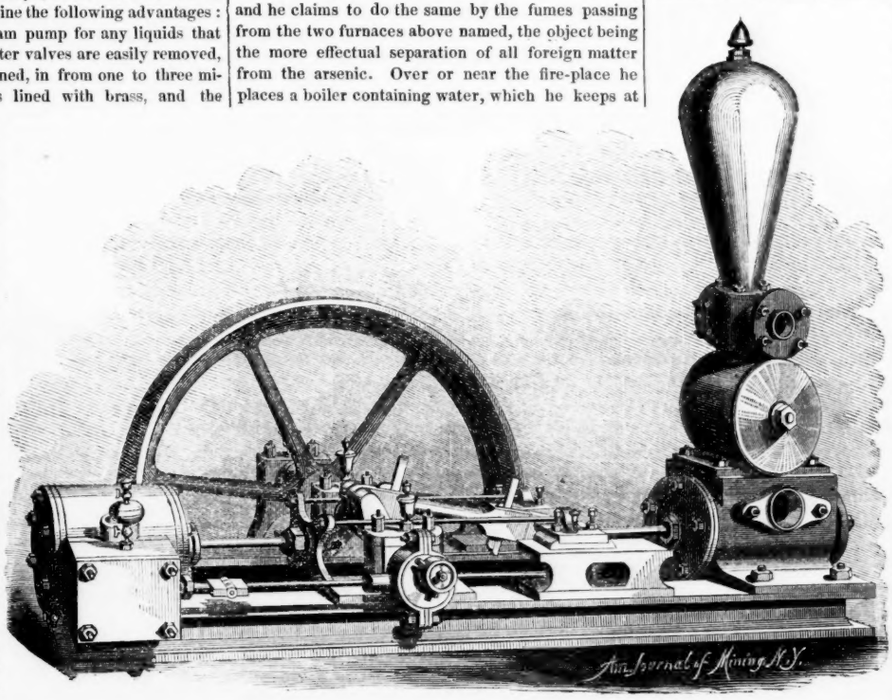
STEAM PUMPS.

On this page will be found an engraving of Messrs. Campbell & Hardick Bros.' Steam Engine and Steam Pump, built at the "Niagara Steam Pump Works," No. 9 Adams street, Brooklyn, N. Y. Messrs. C. & H. Bros. claim for this machine the following advantages: It can be used as a steam pump for any liquids that can be pumped; the water valves are easily removed, and the valve chest cleaned, in from one to three minutes; the cylinder is lined with brass, and the valve chest and valves are made of the same material; the pump can be detached from the steam cylinder in one minute, and machinery of any kind be driven as well and economically as with any other direct acting engine in general use. Its simplicity of construction is apparent, and for cheapness, good workmanship and durability, the manufacturers claim it has no superior. They further state that it has been used for over two years by a large number of oil refiners, in both pumping and agitating oil, and in *every* case has given entire satisfaction. It has also been applied to the pumping of mines, while at the same time driving the hoisting apparatus.



CAMPBELL & HARDICK BROS. STEAM ENGINE AND PUMP.

More Improvements in Copper Smelting.

C. Pengilly, of Falmouth, England, has recently patented a process for the treatment of sulphurous and arsenical pyrites containing copper and tin. From the *Colliery Guardian*, we learn that he employs two furnaces of any convenient lengths, but he prefers the upper one to be about ten feet long and the lower one about forty feet long. The upper furnace is arranged at the end of the lower one in such a manner that the ores treated in the upper one may be heated by the fire from the lower one, and so as to admit of the ores being let down into the lower furnace at the end farthest from the fire-place. The ores, as obtained from the mines, he introduces into the upper furnace, and by a mechanical contrivance they are continually stirred without admitting any more cold air than is absolutely necessary to sublime the volatile sulphur; the ores from this furnace he lets into the lower one at the end farthest from the fire-place, and by a mechanical contrivance, continues to stir and turn them until they arrive at the end near the fire-place, or until the whole of the arsenic is sublimed. This furnace is so arranged as to contain four charges from the upper one, each charge being in a separate stage of the process; or, provided the ores to be operated upon do not contain sufficient sulphur materially to affect the sublimation of the arsenic, he substitutes for the two furnaces above-named, the ordinary rotating iron calciner, the fumes from which he passes through a hot tube of iron, clay or other material some distance from the calciner, and he claims to do the same by the fumes passing from the two furnaces above named, the object being the more effectual separation of all foreign matter from the arsenic. Over or near the fire-place he places a boiler containing water, which he keeps at 180 to 200 deg. Fah. The ores freed from the sulphur and arsenic he draws out of the furnace into shallow granite cisterns of a circular form, at the same time introducing the pater at 180 to 200 deg. Fah., and crushes the ores in the water to a powder by a revolving granite wheel; the water flowing from the cistern he filters and precipitates in the usual way; should there be tin in the refuse he extracts it by the usual methods.

New Amalgamator.

There is now being made at the Sacramento (Cal.) Iron Works a newly invented amalgamator which, the *Bee* says, promises to supersede all others now in use. A miniature edition of this amalgamator has been in operation there for two or three months, and in that time has operated on tailings from many mining countries, and has never failed to make them pay.

Rich Gold and Silver Diggings near Gold Hill—$18 per Day to the Hands.

The Gold Hill *News* of August 14th says: "We are in possession of an authentic statement in regard to the discovery of immensely rich placer diggings not far from this town, which leads us to expect that within a few months there will be a 'mining excitement' in Nevada such as will rival the rushing days of California. We are not at liberty to indicate the precise locality of the New Dorado. Three men who have been working a claim in the diggings referred to, during the past six months cleared $15,000. A two bushel barley sack of dirt from a claim adjacent to the one spoken of, was brought to Virginia a day or two since. From it $38 in gold was taken. Four men lately, on literally surface dirt, averaged $18 per day. And they are confident that the average yield through a large district which they have described to us will be from $12 to $20 per day per man. From two to twenty feet below the surface there is free gold and gold and silver in quartz—the latter, of course, requiring the services of the mills to work it. We assure our readers that we here only recount what has been told us by citizens of Virginia of unimpeachable character for truth and veracity."

The Hagan Desulphurizer.

A San Francisco exchange says: The Pacific Ore Company, of this city, have in operation at Grass Valley, Nevada county, a large roasting furnace on the Hagan plan, which is said to be a success. The furnace is of fifty tons capacity, and is expected to desulphurize ore at the rate of twenty tons per day. The furnace has been used several weeks, and we are informed that no difficulty is found in amalgamating the gold from the most refractory sulphureted ores, after they have passed through this furnace.

Important to the Iron Interests of the United States.

The United States consul at Sheffield, England, under date of August 27th, in a communication to the Secretary of the Treasury, states that he was present at Nottingham on the reading of a paper before the British Association on the conversion of melted cast iron into steel by the pneumatic process. A discussion followed, which was participated in by Mr. Bessemer and other gentlemen. Consul Abbot further says that he called the attention of Mr. Bessemer to what has been stated by his opponent to be a defect in his mode of converting iron into steel, namely, that when

large masses of melted iron, amounting to from three to twelve tons, are converted into steel, it does not become homogeneous. Mr. Bessemer partly admitted the force of the objection, but stated that in the works near London an improvement has recently been made by which, after the introduction of the Spiegel Eisen, the whole is stirred up by arms fitted to a revolving cylinder. He also stated that the iron of the United States which he has seen was peculiarly adapted to the manufacture of steel by his process. In England only the very best iron can be used for this purpose, and that which is most free from foreign substances, especially sulphur and phosphorus. The iron which is chiefly used in the Bessemer Works are varieties of red hematite, the best of which is found on Morecambe Bay, near Furness Abbey. Consul Abbot closes by saying: "Valuable as is the invention of Mr. Bessemer, I cannot recommend it to American manufacturers unless they make use, in the process, of the very best pig iron, and that which is comparatively free from sulphur, phosphorus and other impurities." The following is an abstract of the remarks of Mr. Bessemer, alluded to in the communication of Consul Abbot: Before the introduction of his process the entire production of steel in Great Britain was one thousand tons per week, and now there was machinery for the production, on his process alone, of five thousand tons in the same period. One of the most valuable purposes to which his steel was applied was the construction of locomotive engines and rails. Where iron had been worn out in a few months, steel rails had been in constant use for four years, at the end of which time the first side was still in use. At Camden Town there was a portion of railway over which an immense amount of traffic passed. An iron rail and a Bessemer steel rail were placed opposite each other, and when the iron rail had been changed seventeen times the steel rail was still not worn. The Bessemer steel was also valuable for the manufacture of tires, the construction of ordnance, shafts for marine engines, cranks and notably for the cranks of locomotives; indeed there was scarcely any purpose for which malleable iron was formerly used that steel could not now be employed. A yard of the Camden Town rail, to which he had referred, was sent to Sheffield to be made into round bars, and came out of the rolling mill in beautiful black bars, three-eighths, five-eighths, and three-quarter inches in diameter, and were not worth less than $18 per ton, the cost of conversion being less than $2 per ton. In regard to the price of steel, Mr. Bessemer said that firms that had expended immense sums in plans and machinery desired at first as large a return as possible for their outlay, but when manufacturers had been remunerated for their first large outlay they would be more reasonable in their demands. The price of cast steel in Sheffield for the lowest purposes, such as making shovels, Mr. Bessemer said was $36 to $40 per ton, and the better kinds cost from $50 to $80, according to the reputation of the maker; but at this time thousands of tons were being sold at $13 per ton.—*Evening Post*.

King Carbon.

[Written after visiting the coal wharves at Scranton, Pa., by Solon Robinson.]

Unlock your vaults, great Carbon King,
And let me read your secret hist'ry!
How was your kingdom made, I'll sing,
If you will show the wondrous mystery
You've hid within these rugged hills;
What is your heart, your life, your soul,
Which all the world with want so fills?
It constant cries for mineral coal.

But a'n't that name a slight misnomer,
If coal was made of growing plants,
Which grew before the age of Horace,
Or any of his great-grand-aunts?
Say, were you made of ferns and trees,
An age before the age of fleas,
Ten million years before life breath'd
When floods and fire those mountains clear'd?

What is your age, old Carbondale,
And what your looks, when you were young?
Or were you ever young and hale?
Who of your youth has ever sung?
If your dynasty is recorded,
I'd like to see how it was worded;
How you date back your family line
Beyond the age of Solar time.

I've been down where they dig your vitals,
And list'n'd long, but all in vain,
To hear some bard, at his recita's,
Tell how these ferns grew on a plain
Up where the light of living day,
In vivid heat of tropic sun,
Gave carbon room on earth to stay,
Before 'twas sold so much per ton.

'Twas long before the age of steam;
'Twas long before the age of man;
Before he harness'd for a team,
King Carbon on this railroad plan;
By which he girds the earth above,
As God girds all the earth with love;
For 'twas His love that gave us coal,
This buried king's great living soul.

Before the time of man on earth,
How many, many million years,
It was of life an age of dearth,
As in this coal no sign appears,
No sign of aught but tropic plants,
In which no reptile ever haunts;
For what could breathe carbonic gas,
Which brought the age of coal to pass?

Mining Summary.

Nevada.

The Comstock.—Owing to the non-arrival of the California steamer, we are without our usual review of the San Francisco Mining Stock Market.....The *Enterprise* of Aug. 25th says: The rich streak of ore found a few days ago in the new part of the Gould & Curry mine working from the Bonner shaft, still continues to hold out as it is sunk upon with the incline. It is not very large, but the chances for its leading down into some large body of the same article are excellent. An assay of some of the average of this ore, made a day or two since, yielded $185 44 to the ton; another yielded within three or four dollars of the same amount.....The same paper says: The following is the statement of the amount of bullion shipped or received for assay during the past week: From the office of Wells Fargo & Co., in this city, there were shipped 4,134 pounds of assayed bullion, valued at $132.324 77; from their office in Gold Hill, 2,618 pounds, valued at $76,475 78. The amount of crude bullion received in this city for assay is as follows: E. Rubling & Co., 10,367 ounces; Theall & Company, 13,283 ounces; L. Kub, 9.185 ounces; G. W. Dorwin, 1.185 ounces. In Gold Hill: Van Wyck & Sanchez, 47,374 ounces; Edwards & Wiegand, 28.766 ounces; H. Harris & Co., 2,935 ounces.....The San Francisco Stockbrokers' circular for the week ending Aug. 25th says: The dulness incident to the Mining Share market for the past month still continues, but during this week nearly all stocks have been well sustained, and for the most part are firmly held at the close .... Hale & Norcross has met with trifling sales at $1,600, and closes at $1,750 asked. There is no new feature in the mine, every portion of which looks exceedingly well.....Savage rose from $1,140 to $1,175, receded to $1,155, rallied to $1,165, and sold yesterday at $1,165, s. 30. During the week ending 18th inst., 1,931 tons of ore were extracted, 756 tons tons shipped from the mine. The approximate value of the ore extracted amounted to $48,000, and the estimated cost of the reduction and extraction of this ore was about $22,000. The new body of ore, in the north drift, 6th station, is now 10 feet wide, and promises to become a valuable addition to the resources of this mine ..... Crown Point receded to $875, advanced to $890, and closes at $950. The product of this mine now averages about 100 tons per day. The Rhode Island mill commenced running again on the 21st instant..... Gould & Curry has not been dealt in this week, but is well maintained at $790 asked. The small seam of ore discovered recently, 250 feet south of the Bonner shaft and fifty feet below the 2d station, may, it is thought, lead to a development of some importance at a greater depth than has hitherto been attained. The receipts of bullion will probably amount to $120,000 for the current month.....Yellow Jacket is in better favor, and some 100 feet were sold, advancing from $650 to $750, b. 30, closing yesterday at $735, s. 5. During the week ending 13th and 21st instant, 58 tons of 1st class, and 4,752 tons of 2d class ore were extracted from the mine, and the yield of bullion amounted to $127,380. Considerable 1st class ore is now being found in the south mine, which is netting the company $300 per ton. We are informed that this mine is looking better than at any previous period. .....Ophir has been in more request, rising from $210 to $235, and selling yesterday at $225. Telegraphic advices state—"North Dritt unchanged; ore in A street tunnel running low; vein in the 7th station not well defined." Receipts of bullion to the 21st instant exceeded $22,000.....Cholar-Potosi rose from $173 to $180, then sold at $179. Operations have been resumed below the Potosi tunnel. Throughout the Plute station ore continues good, and some ore of good quality is also being met with in the old Bajazette ground. The south drift from the main shaft is in 360 feet, and is supposed to be yet 80 feet distant from the vein. During the week ending the 18th instant, 492 tons of ore were sent to Custom mills. .....Belcher was dealt in at enhanced rates; advancing from $115 to $155, closing at $160. Empire mill and mining company was sold at $114*a*110 per share.....Imperial has fluctuated but little, selling at $90*a*95, closing at $100, b. 30. The new shaft is now down 520 feet. Both the Rock Point and Gold Hill mills are running up to their full capacity, and the ore from the Alta mine continues to show some improvement.....Confidence declined from $53 to $45, and closed at $46, s. 10. Overman was dealt in to the extent of 1,000 shares within a range of $23½*a* $29¾, b 10 closing at $24, b. 30. Bullion rose from $24 to $31, and sold yesterday at $29.....Omnibus R. R was dealt in at $55 per share. North Beach and Mission is held at $43 bid. This latter company has been paying regular dividends of ½ per cent. per month for some time past.

Pahranagat.—Dr. O. H. Congar, writes from Logan Springs, Pahranagat, Aug. 9th, as follows: The first appearance of the country in this region is quite unfavorable to the new comer, especially would it be so to an expert; but as soon as he begins his explorations and investigations his views are soon changed. The data here obtained upon which is based its geological position, and also to quite a degree the evidence as to the extent and permanence of the mines, is quite easily obtained, especially the palæontology of the stratified rocks which compose the greater portion of all the ranges of mountains in this portion of Utah and Nevada; being tilted up at almost all angles from a perpendicular, but very generally dipping on a line parallel with the course of the range. In the Pahranagat district there is but little if any evidence wanting to place the stratified rocks forming the main range, as well also of most of the spurs putting out from it, as the upper Silurian, Devonian and lower carboniferous. The whole eastern slope, in which the mines are found, bear evidence at some time of being the seat and vortex of a most violent warfare of Nature's forces, and, that which now forms a very deep cap over the primary or igneous rocks was, no doubt, once a part of the stratified secondaries that now flank it upon every side. The great fire which prevailed beneath and burst forth from that portion of the mountain, must have melted down like wax those stratified rocks which now caps over the entire district to, as yet, an unknown depth. Calc spar is very abundant, filling almost all the crevices in the rock, and is very often mistaken for quartz. The felspathic variety of porphyry crops out largely at and near Logan Springs, which are on the extreme southern border of the mines. This is the only place where this formation appears. None of the granite and trap varieties have yet been observed in any portion of the district. In view of these facts the conclusion is unavoidable that the primary or azoic rocks are deep down and heavily capped by the metamorphosed lime and sand stones. This ought to admonish all who are sinking shafts upon any of the lodes to work cautiously and not become discouraged at any nipping out of the veins or their apparent disappearance altogether, for it may reasonably be expected that they will assume all angles of inclination and trend. Lime shales, chloritic and alum slates fringe the eastern border of the mines, dipping into them at an angle of about forty degrees, but upon the western slope of this range the stratified lime and sand-stone series, belonging to the above geological periods obtain almost entire as they were deposited, excepting the tilting up at various angles from ten to forty-five degrees, and strange as it seems and really is, many of the best lodes of the district have been boldly thrust up through this immense marine deposit. The whole cap of the mountain seems to have been abruptly and violently lifted up as if by the explosion of a magazine, at which time these lodes shot out in a semi-circular form around and near its base. The character of ores include almost all the valuable and worthless varieties carrying silver. In some portions of the district copper and iron greatly preponderate, carrying sufficient silver, intermixed with galena, however, to make them valuable some time, if not now. In other portions, or at least three lodes—viz, the Pike, Lilly and Jessie and List, (the three former situated upon the eastern slope, the latter upon the western slope)—the *Horn Silver* was discovered, and aside from these no chlorides of silver have been observed, but the sulphurets of silver are not only largely obtained in the above lodes, but also in many others, especially in all veins upon the western slope of the mountains. Galena is not from present developments going to obtain in quantities as was hoped from the appearance of surface croppings. This, for the smelting process, is not encouraging, yet hopes are entertained that enough can be secured to render all the smelting works that may be erected in the district not only a success but also profitable for the investment. Several companies are now vigorously at work cutting up smelting works in connection with stamp mills and crushers, and others, relying entirely upon the old process of stamps and amalgamation, among whom I might very justly mention the Montauk, International, Alameda and others, represented by the indefatigable Raymond, Maj. Lyon, W. H. Mills, Esq., and I presume others that have not progressed very far as yet. In this connection I may perhaps be permitted to say that the Alameda company have their smelting works entirely completed, and test trials have already been made in them, giving the most satisfactory proofs of their capabilities to perform what is expected of them.....To the steady and industrious person there is always an opportunity to obtain employment in all mining localities where developments are fairly commenced. But Pahranagat is still quite new, and uncertainty prevails yet to quite an extent; hence I would not advise any one to leave a good situation to go there.

Union.—The Nye county *News*, Aug. 25th, states that the Knickerbocker mill is now working ore without roasting, as their roasting house was so warm that it was impossible to keep men any length of time at that business. From those who have been over to the mill, we are informed that it is likely to prove a success, in which case it will be a large item in favor of the mill, saving somewhere near $200 per day. Should they be enabled to treat it successfully without roasting, ventilators will be introduced, and the roasting house made more comfortable, and operations go on under the old system.

Hot Creek.—A correspondent writes from Hot Creek, Aug. 1st: We have made a rapid survey of some of the principal mining locations, and can truthfully assert that in all our mining experience, we have never seen a district that gave promise of anything

approaching the richness that this does at the present writing. The ledges are unusually large, well defined, and assay all the way from $500 to $3,000 per ton. Prospectors are arriving and departing daily, and of those leaving, nine out of ten declare their intention of returning at an early day, prepared to stay. As for your correspondent, he is very well pleased with his prospects and the country, and gets along very comfortably, barring the bugs.....In a subsequent letter, he writes: The more I see of this section of country, the stronger becomes my conviction that in a very short time it will excel any other known mining region for the abundance, size and richness of its silver-bearing ledges. Almost every day something new and rich, in the way of locations, are made. Among some of the richest discoveries (and among so many good ones, it is difficult to particularize,) I will mention the Old Dominion, Merrimac, Gazelle, Mammoth, Silver Fleece, Old Dominion No. 2, American Hunter, Silver Glance, Allison, Shaw, Butter, Occidental, Indian Queen, Silver Light, Indian Jim and Central America, all of which show such quality and quantity of ore on the surface, as to warrant the assertion that each and every locator in them has a sure fortune in prospect, if he works or sells the same for any sum approaching their value. The only thing required here now, in order to make this locality a household word throughout the land, is a sufficiency of mills to work the ore—a desideratum we are likely very soon to obtain, if all we hear proves true.

Northumberland.—A correspondent travelling through this District, says: It will soon take rank among the best in the State, if what we hear proves to be correct. We were shown ore that is said to assay up among the "thousands," and its appearance warrants a belief in the statement.

Danville.—A Nevada exchange, says of this new district: The principal ledges are the Vanderbilt, Silveropolis, Maid of Erin, Monadnock, Green Monster and Hibernia. Specimen of their ores have just been assayed by J. R. Murphy with the following result: Vanderbilt, first class, $1,702 82; second class, $895 89; Silveropolis, $387 50; Maid of Erin, $486 97; Monadnock, $207 15; Green Monster, $103 67; Hibernia, first class, $3,560 87, second class, $1,197. The ore of the Vanderbilt is remarkably free from base metals, and is characterized as a sub-sulphuret of silver, with a handsome amount of metallic silver coating its surface. That obtained from the Hibernia is the richest yet discovered in the district, but the vein is small, being only twenty inches in thickness. Thus far very little work has been accomplished on the ledges, excepting the Vanderbilt, upon which there is an excavation to the depth of ten feet, partially disclosing its enormous proportions. From the general appearance of the ledges and their bold outcropping, the discoverers are satisfied that they are generally large and will prove to be well defined. The Vanderbilt particularly presents a splendid outcropping mass of superior mineral, indicating the ledge to be of uncommon size, and positive development shows it to be at least twelve feet in thickness. Twenty tons of first class ore were taken from the excavation on this ledge, which it is estimated will yield $300 per ton. We learn that it is the intention of the owners to continue their work on the ledge with vigorous earnestness until their value shall be fully proved.

Reese.—The *Reveille* of Aug. 25th says: The Keystone mill, under the able management of Captain A. L. Page, is doing a splendid business. During the past fourteen days it has produced bullion of the value of $20,000. The mill has achieved a reputation for close and accurate work, in the reduction even of the most rebellious ores. The amalgamating department of the mill is under the charge of Mr. J. M. Dawley, whose success and skill seem to be increasing daily .....We were shown yesterday at the assay office of J. S. Currie, a handsome bar of bullion, valued at $1,191 74, obtained from four tons, eleven hundred and seventy-seven pounds of ore from the Magnolia vein on Lander hill. The ore was reduced at the Keystone mill, and is an instance of remarkably close working. The assay value of the "pulp" was $1,267 79—a difference of only $76 02 from the value of the bullion, and showing that the ore was worked to within six per cent. of the assay.

Colorado.

The Denver *News*, of Sept. 5, says: The mountains about the head of Snake River and its branches appear to be a perfect network of silver bearing lodes, and the abruptness of these mountains are peculiarly adapted to an economical working of the lodes, as comparatively short tunnels must strike the lodes at a great depth from the surface. The whole country below timber line is covered with heavy and excellent timber, rendering the facilities good for furnishing cheap lumber and fuel in abundance. The best of water power is available upon all the branches of the Snake. A very large number of assays of the ores from this district have been made, showing their immense richness, and now that the miners and prospectors have, by their own unaided labor, opened roads and developed a large number of the lodes, we trust that preparation will be made during the coming fall and winter for the erection of reducing works. .....We have received from Mr. R. L. Wright a specimen from the Union Lode, near Golden Gate. The ore is copper, and Mr. B. showed us a lump of pure copper weighing five ounces, which he had smelted from one pound of the crude ore. There are a great many rich copper mines in the vicinity of Golden Gate. The Nonpareil Mining company, which owns property in that vicinity, received as the result of an assay from one of their lodes sixty-five per cent. in copper .....The Black Hawk *Journal* of the 4th inst. says: Arnold, Baxter & Co. are ready to commence work with their mill at Eureka Gulch..... Ed. Moores has leased the Empire mill, mouth of Chase Gulch, and will have it in running order shortly .....Several Eastern parties are getting at work in the Snake river mines.....There are still about 40 men in the so-called Bear river mines. Some sluices are running, getting about a dwt. a day per hand, but most of those there are hunting for the source of the gold high up among the heads of the stream. There are only experienced men left, and they are likely to find it if it can be found..... In Clear Creek county mining operations are reported at length by the *Journal*. We condense: T. H. Lowe is still developing the Robinson lode, head of Virginia canon, for "The Kentucky and Colorado Company." He is getting out some first-class ore. He is also sinking on the Rufus Snyder, in Morris district, for the "Louisville and Mill City Company." Further, he is taking ore from a very fair crevice on the Seaton, No. 8 west, for the "Lowe Mining Association," of Boston. The 12-stamp mill belonging to the latter company was to have started to-day.....The property of Womack & Seaton, reputed one of the most valuable in the county, is not being worked. We are told that Dr. Seaton might have had $200,000 for it, of his English friends, but that he thought it not enough.....About 2½ miles below Idaho, 18 from Mt. Vernon, and 33 from Denver, Gen. Buford is getting the "Federal Union Mining Company" under way. The company was organized in Greenfield Mass., last April, capital $100,000. The mines consist of the General Buford, Moline, Deerfield, Virgin, Mammoth and Empire lodes, situate on both sides of the creek and near together. A tunnel has been run to the Buford, 43 feet, striking it 56 feet from the surface: this will now make a bend to the right and continue as an adit on the vein. There is a shaft on the Moline 36 feet deep, also an incline, being run in for the purpose of exploration. The other mines, except the Deerfield, are not better worked at present. The company have a water-power 1500 feet long on Clear Creek, 1100 of which gives 16½ feet head. The race and flume constructing will be 500 feet in length, calculated for large centre-vent, turbine wheel, 100 horse power. The dam and mill are also building .....On the Crystal lode, one of the famous lodes of California, the Fulton Mining company have their mine well opened, with from 300 to 500 tons of ore out, and they have taken some steps towards building a mill on Payne's Bar. While they hesitate as to which is best, mining is suspended..... The Star Gold Mining company own 1200 feet on the Crystal, west of Virginia canon, from which they have run an adit west 200 feet, intersecting a shaft 154 feet deep. Capt. Slawson says this shaft shows a fair ore crevice. Three hundred feet west is another shaft sunk 123 feet deep, in cap; and 300 feet further is another 65 feet deep, also in cap.....The Central City *Register*, of Sept. 4, is crowded with mining matters. We condense as follows: The shipments of bullion from Gilpin county for the past week, if fully estimated, would amount to $30,000 increased production over what it was two weeks ago. Better results are expected..... We have seen specimens of galena from this side of Golden Gate, also of copper ..... We have been shown several elegant specimens of sulphide of silver and ruby silver from the Glazier mountain, Montezuma district, Snake river. The ore will assay 60 per cent. in metallic silver. No better prospects ever were seen in any country than are to be seen there..... Lyon & Co. this week shipped 65 lbs. of bullion, worth $4000, consisting mostly of silver. They hope to make weekly shipments hereafter. .....The Mountain Eagle company, organized to work the Caledonia lode in Wideawake, has its main shaft down to a depth of 140 feet, with a crevice of ore ranging from six inches to four feet in width. ..... The Montezuma company are sinking on the Newfoundland lode, in Nevada district. Their main shaft is 330 feet deep, and has a wide crevice, containing two and a half feet of pure ore, one foot of which is is mostly yellow sulphide of copper, which assays one hundred and fifty dollars in gold, and fifty-eight dollars in silver, per ton The work of sinking goes on day and night. The mass of ore already exposed promises handsome returns, provided the precious metals can be saved.....John Kip has now reached, on the Leavitt lode, a depth of 80 odd feet, and has about fifteen inches of ore, composed of sulphides and quartz. Sprinkled through it is a large amount of gold, visible to almost everybody's eyes. Samples such as we saw would probably contain two or three dollars per pound, perhaps more.....The Reduction Works of the Rollins company, south Boulder, are working the ores of the Perigo lode. Unlike many companies, this one has out and exposed enough ore to keep its mill running for a long time, and will have no lack in future. A four days' run of one-half the mill yielded forty ounces of amalgam, equivalent to about ten ounces of retort. The sulphide ores of the Perigo lode yield a large amount of silver, assays often giving as much as one hundred dollars per ton in that metal. To aid in amalgamation, sodium amalgam is used with excellent success.....This summer valuable silver mines have been found in French Gulch, thus showing a continuous belt of silver mines through to Montgomery and the head waters of Ten Mile creek. How much farther they extend we do not know. The silver mines most opened are those of Snake river and Argentine. In both regions a large population is now at work developing mines. At Montezuma, the Buffalo company, organized for the purpose of working the Sukey lode, formerly owned by Messrs. Pratt, Morris & Lynch, has a Kustell furnace completed. It is built of granite, lined with fire-brick and fire-clay. It has a puddling pot or crucible, into which the metals when melted flow. The ores of the Sukey lode, like most others in that region, are galena. The lode has been stripped seventy feet along the surface, revealing a continuous vein of ore three feet and a half wide, and a crevice six feet wide. Properly these ores should be crushed and portions of them concentrated, but no machinery has been erected for that purpose. The average assay from the ores of this lode is upwards of two hundred dollars. The mine is very easy to work, and ores can be taken out with a rapidity which must prove satisfactory to the most sanguine. The first run will be made in the furnace this week. We understand that it is not the intention of the managers to roast the ores, but to smelt them at once. We fear the result will be that the lead will run down into a mass, as sulphuride, and that the work will be very incomplete. We shall wait with interest for the result, which we hope to receive soon. A large number of mines are being opened in every portion of the Snake river regions. The prospector seldom has to sink more than two or three feet to find the heavy sulphuride ores, while usually they are found on the surface. A few lodes contain no galena, but so far as tested they are nevertheless rich in silver. Because they contain little or no galena, they have been to a great extent neglected. The richest discoveries of the season have been made in what is known as Peru district. Samples of ruby silver have been obtained there which assay sixty to sixty-five per cent. of silver. Among the fortunate ones are Commodore Decatur and Mr. Reno. Their richest lode is situated at the base of Gray's Peak. The lodes have unusually wide crevices and prominent outcroppings. Lodes may often be seen at a distance of two or three mines, so that the work of prospecting is a very light one. We have known persons to discover an average of eight lodes per day, when prospecting was first commenced in that region. In no portion of the country are lodes more numerous. Most of the lodes have the appearance of being principal ones, and not feeders, as is too often the case. In crossing the ridge which divides the Snake river from the Argentine region, a considerable change occurs. There is vastly less galena in any of the lodes. Not even the Paymaster will at all compare with those of the other side of the dividing line. The ores, however, are very rich in silver, often yielding immense assays of that metal. The rocks are not favorable to large surface out-croppings, and consequently the veins are, on the surface, mostly narrow. The appearances indicate that they will widen as greater depths are attained. Some of the lodes are abundantly wide on the surface. Among these is the Richmond lode, owned by Hasbrouck & Turck. This lode has a crevice fully ten feet wide. The centre is filled with honestone, which is easily quarried out, and greatly resembles petrified wood. At each wall is a seam or vein of ore, containing galena, zinc and copper; assays indicate that it is rich in silver. The owners are now driving a tunnel on it day and night. The tunnel enters the mountain on Quail creek, and when driven fifteen hundred feet will reach a depth of fifteen hundred or two thousand feet below the surface. By the side of this lode is the Savage, owned by the same parties, and opened to a considerable depth. The ore is often extremely rich, but the crevice has thus far been very narrow. It, too, may be considered as a very promising mine. The same might be said of a dozen others. In the Wheeling lode we found samples of baryta, such as predominate at Montezuma, and also a considerable quantity of fluor spar. On Quail Creek considerable work is being done. J. W. Watson is opening the Baker lode and taking out very superior galena ores, assaying often as high as five hundred dollars per ton.

Illinois and Wisconsin.

Relative to the lead mines of these States, "N. C. M." writes from Dongola as follows: Hazel Green mines, owned by Crawford Mills & Co., are 12 miles from Galena, and along the southern border of Wisconsin. They were first worked in 1826 by white men, and by Indians long before. The beautiful village of Hazel Green is near, and the whole region, except in the diggings, is covered with well improved farms. Here some of the best lodes were opened. Often as many as 500 Illinois miners were at work at one time. The rock is softer than elsewhere. When foreign miners came they made good wages inside of the ranges dug by Americans. I saw children working over heaps of dirt made 30 years ago, and whole familes are supported by this means. The practice is bad, for it

leads to stealing mineral when brought to the flumes to be washed. One successful miner told me that he believed as much as $10,000 worth of mineral had been stolen from him. In early days the Hazel Green miners paid no attention to small discoveries; they would get out a few hundred pounds, and if they did not strike rich leads they left their work and went elsewhere, and one might have gathered tons. Afterward it was all picked up. The price was only about one-sixth what it is at present. Since 1845 foreigners have worked only in the old ranges, and little has been done since 1858. Up to this time over 130,000,000 pounds have been taken out; the loss in smelting is 30 per cent., hence the net yield was 91,000,000 pounds. The deepest mining is 100 feet; and there remains 270 feet through the magnesian to the blue limestone. It is 50 or 60 feet from the upper to the lower magnesian, which is 500 feet thick—in this the Missouri lead is mined. It is softer and more open than the upper magnesian. Of course, they are troubled with water—and the Hazel Green mines have not been worked for this reason. The owners already have driven an adit level over half a mile. When below the level of the streams steam pumps must be resorted to. When the English, 200 years ago, commenced to mine in earnest, they considered a shaft of 100 feet as only a commencement.... The "New California Mines" are eight miles from Galena, at the foot of a high bluff, and close to the Mississippi. The Illinois Central first was graded here, but the workmen discovered nothing. In 1862 a fisherman went out one day to prospect, and found a crevice. The land belongs to a German widow, and previously it was not thought worth a cent an acre. Repeatedly it had been sold for taxes. Already a dozen good mines have been opened, each of which has yielded from 200,000 to 500,000 pounds, and some as much as 10,000,000. The cost of getting it out has been less than 2c., and it has sold for 7c. Two men often take out from 500 to 1,000 pounds per day. Most of these mines have commenced to yield after a few days' work. The bed rock dips to the east; constant pumping is required, and the mineral grows heavier as it goes down. They say it will be profitable to mine 100 feet deep....Adams' diggings are five miles from Galena—were opened some years ago, and after being worked 40 feet they seemed exhausted. A pump, run by water, was set at work; it runs night and day, and over 1,000,000 pounds have been taken out.... Marsden's mine is five miles from Galena. A few years ago, a farmer, in digging a ditch to clear a creek, struck his spade on a solid sheet at the bottom of the spring. A shaft was sunk through this 15 feet, when they came to a large, flat opening, 150 feet wide, containing a solid sheet 10 to 15 inches thick. Fifty feet below this was another opening, containing mineral, and now, on three-fourths of an acre, about 7,000,000 pounds have been taken out. Owen, in his report of this region, states that the Galena mines do not promise endurance because he saw no action of fire in the rocks, but in this mine it is abundant in iron pyrites, blend, black jack and sulphur, blending these specimens. This mine is drained by an adit level, into which water from lower depths is pumped by steam. The property, including 100 acres, recently was sold for $50,000. Farms which, so far as I could see, are just as valuable, and on which no prospecting has been done, can be bought in the vicinity for $20 to $40 an acre. ..New Diggings, 16 miles from Galena, is the name of a village, and also of the mines. Among these is the Champion, which, from first to last, has yielded nearly $1,000,000, and still it is immensely productive. I saw several thousand dollars worth of the mineral lying loose, which the owner does not take out because he has no use for the money. In twelve months over 2,000,000, pounds were taken from an opening 12 feet wide and 60 feet long, all in a solid sheet, from 16 inches to 4 feet thick, and resting on two legs. Fifty thousand pounds were got out at one time. The mine is perfectly dry and quite neat ...At Shullsbury, 20 miles from Galena, the diggings, in early days, were very productive, but the water coming in, they were abandoned Twenty years ago a cutter pump was rigged, and they have yielded heavily. I went down into Mr. Davenport's and Mr. Weatherly's mines. They were the best conducted, cleanest and most orderly of all the mines I saw. Every particle of mineral was swept up, and all loose rock taken to the surface. At the forehead of Mr. Davenport's mine the lead was as glittering as a jeweler's shop. The ground of these two is owned by a widow, who receives one-sixth as rent, and every year she gets a fortune....The Oakland mining company, organized as above, have been running a level over three years, have penetrated 1,700 feet, and have fine prospects. In these mines are large quantities of carbonate of zinc, or dry-bone, which would find a good market if there were works near for reducing it. The nearest is at La Salle, some 150 miles, and the price paid is about $10 a ton.

....The Emerson mine is in the same range as Shullsbury and Hazel Green, but is so low down as to be on the blue limestone. A large force was at work. This was the only place where the men wanted money for whisky. We had a dispute as to how much would pay for the drinks....Democratic Diggings are about a mile from the town of Denton; formerly they were largely worked, but the mineral never was very good, owing to the great quantity of black juck. Scarcely anybody was to be seen, the aspect was desolate, and the whole concern seemed played out.. Mineral Point is 40 miles north of Galena, and on the blue stone. The mineral is found in flat openings, one below another, and connected by chimneys. The last and lowest are most productive. In the Terril lead of three openings the mineral was from one to two feet thick, and from five to two hundred feet wide, and several hundred yards long. This was at a depth of 80 feet. At Linden, seven miles from Mineral Point, is the Heathcock lead, the most productive ever known; it has been worked down to the blue limestone, and is said to have produced 40,000,000 pounds. Vinegar Hill diggings, near Galena, have yielded 150,000,000 pounds, but water coming in, and the land being owned by several parties, the works are abandoned, and are waiting for another to drain the ground. A mile and a half from Galena, Captain Harris, an old miner, got 13,000,000 pounds from ten acres, at the depth of 60 feet. Captain Esty, President of the Merchants' Bank, who has made a fortune at mining, estimates that only one per cent. has been obtained. It is impossible to get full statistics. From 1821 to 1841 about 12,000,000 pigs of 70 pounds each, were shipped, and the money value is $33,000,000. From 1853 to 1857 over 1,250,000 pigs were shipped. Since then there are no returns. When the Californin gold mines were discovered, thousands of the lead miners went from Galena and Missouri. Naturally they became experts. Without them little could have been done. All efforts in this world, whether successful or not, are preparations for something greater. Every laborer and every thinker helps build the walls of the New-Jerusalem. In civilization, lead is next in in importance to iron. It is doubtful whether gold, even if as abundant, would be as useful. It is found in the upper and lower magnesian rocks which exist in Virginia, Tennessee, Arkansas, Kansas and abundantly in the Rocky Mountains.

Michigan.

From Dupee, Beck & Sayles' statistics of the copper mining companies of Lake Superior it appears that the whole amount paid in by them is $13,465,500—exclusive of the original cost of mining location, and of the sums derived from the sale of copper, which have been expended in developing the mines. The aggregate of cash dividends is $5,770,000.. The Marquette *Journal*, of September 8th, gives the following shipments of ore (in tons) from Marquette and Escanaba as reported by the Companies' Agents:

	Week ending Sept. 7.	Prev'sly report'd.	Total.
Lake Superior Iron Co...	3,064	38,189	41,254
Jackson Iron Co.....	2,146	11,951	14,097
do do			†29,818
P. & L. Angeline Iron Co.	2,283	14,079	16,362
Cleve'd Iron Mining Co..			*20,300
do do do ..			†10,756

*Shipped via Marquette. †Shipped via Escanaba.

The product of the Northern Iron Company's furnace at Harvey this year will compare favorably with past seasons, notwithstanding the disadvantage of having to use a considerable quantity of inferior charcoal.... The Ontonagon *Miner* of same date furnishes the following: The Minnesota product for August was 36 tons 1,200 lbs., the largest for many months..... Rockland and Superior openings on the old vein continue about the same. The south lode at the former improves steadily in the west shaft as they get the full size of the lode in the rock. At Superior the main shaft has just reached the XXX fms. level under the Deep Adit. The vein on which they are working is generally small, but in many places very rich ... No especial change in the Flint Steel River since last week. Product for July about 2 tons 600 lbs.... At the Caledonia a part of the first mass thrown down was brought to the Works the past week—weighing about 5,100 lbs. The other part was not weighed when we saw it, but it is doubtless good for 5 tons Another which lay beside is probably 2½ tons, while several others still but partially uncovered remaining in the lode, will swell the product of that point to at least double its present product in mass copper.... At the Knowlton there is perhaps less mass copper in sight in the mine than usual, but the vein was never more uniformly productive in rich stamp work than at present. This, with about the usual quantity of barrel work, has enabled them to keep up the monthly product—about 15 tons—without any uncommon effort ... Mr. Spalding's new washers at the Opina stamp mill are working better than ever.... Without a full working force either under ground or at the mill, the product of the Evergreen Bluff the past month has exceeded the expectations of all. If a monthly product of 35 tons of mineral gives $6,000 net profit, what will be the results from a similar cost sheet with 50 tons per month? When the reader has solved this problem he can form a pretty correct conclusion as to the merits of this stock at $12 to $14 per share.... The very flattering results again obtained by Captain Trevarrow at the Kenwood mine last month, confirm the impressions made by those of July, viz: that the stamp stuff from the vein had not had a fair trial. The August product was 5 tons 778 lbs., showing a higher per centage than for July. Amount of rock stamped 210 tons. Six tons were smelted at the Works here yesterday and produced probably 75 per cent. This comes from mineral that was mined previous to the late suspension of mining operations by the Company, and hence is deemed a fair sample of the vein rock as selected and stamped for the company.... The mines of Keweena county, as far as we could learn during our brief stay there last week, are generally prospering. In the Copper Harbor district the Ætna continues to be deservedly the center of attraction, its show of mass copper being better than any other mine there has ever afforded. We rejoice at this improved appearance—this really splendid show, on many accounts.... In the Eagle Harbor district the magnates are of course Central and Copper Falls, the former an old standby on the mass copper question, the latter of recent origin, but none the less attractive just now, on that account. A considerable portion, perhaps one third of the large mass at the Copper Falls, is now mainly cut up and most of the pieces have been shipped. We met Mr. Page on the way to the Harbor with one piece of over 5 tons, some of its "illustrious predecessors" having gone as high and of nearly pure copper. In capacity for increased production the history of this mine the past six months has probably no equal on the Lake.... In the Eagle River district the hopeful signs at the St. Clair, Bay State, Phœnix and Garden City fissure veins, are spoken of as more than usually good. Heavy copper in the bottom of the first named and also in the Phœnix West-vein, is more abundant than heretofore, and the prospects for yet having two or three more Cliff veins in that district are not hopeless. The Cliff product for July, over 125 tons, has probably been sustained the past month, though they have had some unexpected detentions by breakage in machinery.... The Keweenaw *Times*, of the 8th inst., says: At the Essex the vein in the drift north of No. 2 shaft is improving in character as they go north. The vein now showing is about 16 inches wide and charged with copper.... At the Madison the stope on the second level and running south from the winze at this mine is showing remarkably well. Although at present giving no evidences of heavy copper, it is perhaps as full of stamps mineral as possible.... About 8 tons of the Ætna mass has been taken down. The evidences of mass copper at this point are still very encouraging. They are now engaged in taking down the vein in the immediate vicinity of the mass, which is, by the way, yielding largely in the several grades of mineral. Nothing whatever is being done on the second level.

Montana.

From the Virginia City *Post*, of August 25th, we take the following: Nine quartz lodes have been recorded this week, all of which are located in the immediate vicinity of this place.... We were shown, at the bank of Hussey, Dahler & Co., on Wednesday last, thirty-two ounces of amalgam, which was taken from a ton of rock that came from the Alameda quartz lode. The rock was "smashed up" in the Seneca Falls mill. It is said that the rock was but the average from the lode.... Roach & Co. are running a ditch for the purpose of conveying the water from Williams' gulch, to the bar claims in the vicinity of Nevada. When the work is completed, which will be in a short time, the weekly yields of the mines in that quarter will be increased materially.... On Monday last Messrs. Boyd & Co., who own claims near Nevada City, in Alder gulch, made a run of twenty-four, and cleaned up $1,500, being a little more than an average run for the same length of time.... The Seneca Falls recently purchased by Mr. J. P. Isaacs for a heavy New York company, is now at work on ore taken from the Kearsage, a lode on which Mr. Isaacs' company have valuable interests. He is also at work developing the Alameda, near Virginia City, on which the company have interests, which will yield large returns when properly worked. Mr. Isaac has been delayed by a want of pans and amalgamators; but will soon be prepared to show that it only takes energy and industry to reap a rich reward in quartz mining in Montana. .... A letter from Bannack, August 20th, says: There is a stampede for the placer diggings of Lembe Valley. The valley is very extensive, and it is said, that it resembles the Boise basin. The diggings are shallow and the dirt prospects evenly, from seven to thirty cents to the pan on the bed rock. But still Bannack moves on. The New York mill puffs away—here and the miners are raising the rich quartz to the light of day—extensive preparations are being made for the erection of furnaces and mills, and progress and improvement are visible on whatsoever side we turn our eyes. The Montana Mineral Land Mining Company are employing a score of men sinking shafts, building foundation for a twenty stamp mill, getting out timbers and other material for a mill and three sets of furnaces. The building for the mill will be 100 by 30 feet, and put up in the most substantial manner. On the Mademoiselle, one claim of which would furnish enough quartz for a hundred stamp mill, there is a vein of pure rich quartz, four feet wide, besides ten feet of iron. They are also sinking on the discovery claim of the Dacotah lode, and on number four. Also on the Arizona, one of the best silver leads in the Blue Wing district, all of which look as well as one could wish. They intend also commencing, in a few days, to develop some of their

property at Rattlesnake. In connection with Professor Eaton, they are also manufacturing fire-brick successfully.... A correspondent writes from Helena, August 18th: Mining is carried on in the old way in our neighborhood. The thirsty gulches are awaiting for the Ten Mile ditch, which is well nigh completed. Prof. Hodge's mill, in Oro Fino gulch, will probably be in running order in three or four weeks. I understand that the Professor will run the mill during the entire winter. From a friend who has lately returned from New York Gulch, I learn that work in the gulches is rather dull, but that the quartz in that vicinity gives encouraging promises. A new lode has been discovered on Trout Creek, about two miles from New York, which is said to be very rich. The mineral land bill is looked upon by the miners hereabouts as unfavorable to the interest of the Territory, but less so than they had reason to fear.... From the Helena *Republican*, 18th ult., the following are taken: By the end of a week, all the principal digging on the ditch of the Hydraulic company, will be finished, and there will be nothing left to be done, before Helena can be supplied with water from Ten Mile, except a little cleaning up, blasting and fluming ... The mill of the Bullion Mining company of Montana will arrive here about the middle of next week and will be placed upon the "New York Lode" by many supposed to be upon the "Big Lead." This mill has three Bullock's crushers with the capacity of fifteen stamps. The building is all ready for the reception of the machinery, and within two months Colonel Keyser will probably be extracting the gold from the quartz. A shaft, forty feet in depth, has been sunk upon the New York ledge, and a drift, forty feet in length, has been run across it. It is reported that a rich three foot pay streak has been struck.... A week ago yesterday the mill on the East Bannack Gold and Silver Mining Company which has been located upon the Big Lead commenced operations, making the first run, however, from the quartz of the Shober lode near by. A grand time was had upon the occasion, and the mill received a most thorough wetting, some excellent champaign, furnished by mine host of the International, being the moistening medium. This new mill is under the control of Mr. David Worden, and combines the alligator-jaw crushers with a pulverising apparatus in which centrifugal force is made to play an important part. The amalgamating process used is the same as that of Freiburg. The motive power used is two engines, with ten inch bores and eighteen inch strokes. This mill will be able to crush from five to seven tons of quartz per day, and it is thought that eighty-five per cent. of the gold can be saved. It remains to be seen whether the great per centage of gold saved will pay for the extra expense which in this kind of a mill is necessary.

Georgia.

A correspondent of the *Times* writes from Dahlonega, September 9th: Gold was first discovered here in 1829; but public attention was not directed to it as a gold region until 1831, when the Legislature made provision for the survey of the land in lots of forty acres each, preparatory to the disposal of them by a land lottery. In 1832, while the Indians still occupied the country the survey was made. The lottery was drawn in 1833, and the gold fever raged with consuming violence. Every one who drew a lot fancied himself a Crœsus, and time and experience alone proved his fatal mistake. The blanks were numerous and the prizes few, but there were a few, and, considering the rude and primitive appliances employed, very large amounts of gold were found. For a couple of years the Gold Belt was considered common property, on which anybody could enter, dig and extract gold; and it was not until a party of United States troops were sent here to protect the mines that the fallacy of this liberal and expansive view of the question was exposed. The period of the promiscuous digging is still known as "the intrusion." Shortly after the allotment of the lands, systematic digging commenced and was continued during the years 1833, 1834, 1835, 1836 and 1837, by wealthy planters, who transported hither a portion of their laborers, and superintended the operations in person. The mining operations were almost exclusively confined to getting the gold out of what were called the "deposits," which were found along the banks of the rivers, creeks and little streams, at a depth of from two to ten feet below the surface. When the deposit was reached it was thrown into a rude machine like a child's cradle, which was rocked to and fro while a stream of water flowed through it, washing away the mud and sand and leaving the gold in a sort of drawer at the bottom. This cradle was generally the sole machinery employed. When the deposits were worked out the planters and their laborers withdrew to their cotton fields. A few pertinacious individuals attempted vein mining with such pounding mills as they were able to construct on the spot, but as a general thing, gold mining languished after the planters migrated. When the gold excitement began in California, the Georgia mines were almost deserted, and during a period of nearly twenty years, little was done except by a band of gold thieves who operated over the whole country, utterly regardless of private rights, and unrestrained by distinctions between their own and their neighbor's property. A very few, probably less than half a dozen, directed their efforts to vein mining, and made it pay well. Within the past year, the mines have again attracted public attention; again the hopes of many are raised to a great height, and capital, skill, intelligence and industry are being brought to bear to give the experiment every chance of a successful issue. Three Northern companies are now making preparations on an extensive scale for vein mining. The first, represented by Dr. Van Dyke, who resides here and is much respected, is engaged in the gigantic undertaking of bringing the waters of Yohoola Creek from a point about twelve miles above Dahlonega to a point close to this place, and about three hundred feet above the mouth of the creek, where it falls into the Chestatee River. No one who does not see the ground can form any idea of the magnitude and difficulty of this enterprise. Butler's Dutch Gap Canal is not a patch upon it. There are several ravines to be crossed, varying in width from fifteen hundred feet to three-quarters of a mile, and in depth from two to three hundred feet. Large iron tubes, three feet in diameter, laid on ponderous trestlework, span these chasms, and make the canal continuous. The largest of these ravines is about two miles from Dahlonega, the trestlework across which is 240 feet high. The object of this canal—which will cost, it is supposed, from $300,000 to $400,000—is to lease the water to companies who propose to wash the vein mines in the hill sides. There is another company, under the direction here of Mr. Pride, who is said to have served in some capacity on the staff of Gen. Rosecranz, also making extensive arrangements for vein mining. The company is represented as immensely rich, and Mr. Pride is generally spoken of as a miner of experience, courteous in manner, and diligent in his business. This company has purchased the "Pigeon Roost Vein," which is situated between three and four miles southwest of Dahlonega, on the west bank of Cane Creek, to the left of the road from Dahlonega to Auraria. This vein is supposed to be one of the richest in the neighborhood. Mr. Pride is now erecting near it the largest pounding mill ever erected in Georgia, and when it is in operation he expects to derive large yields from the mine. He proposes to work a large number of operatives. There is a third company which was incorporated at Washington City, represented by Mr. Peter Hannay, late of California, which proposes to flume the Chestatee River for a distance of ten miles. The operation consists in constructing a wooden race, like a mill race, of heavy plank, thirty feet wide and eight deep, into which the river is to be turned and which it is supposed will be large enough to contain the water even after a large freshet. Thus the bed of the river, for ten miles, will be exposed for mining, and the water for washing, &c., will be easily accessible. The estimated cost of the flume is $30,000 a mile. This company is taking leases of all the lots it can secure on both sides of the river for ten miles, offering to pay the owners as rent one-tenth of the gross proceeds of all metals found. It will employ 2,000 hands.

Utah.

From the Salt Lake City *Vedette* of August 30th we take the following: Yesterday we received a call from Dr. Davidis, who is constructing furnaces at the Cottonwood Mines, about 40 miles from this city. He informs us that he has a furnace that will consume about three tons of ore per day, nearly completed, and by next week he will turn out the first silver brick ever produced in Utah. These works are owned by a wealthy company in Philadelphia, which is represented here by Dr. Conger, and if this furnace is a success they will erect more extensive works next spring. The Cottonwood mines produce very rich ore, and have plenty of wood and water for mining purposes. There is also a very good water power in the immediate vicinity of the mines, which is sufficient to drive any number of quartz mills.... We learn that there is considerable excitement about mines in the vicinity of Minersville, which is about half way between this city and the Pahranagat mines. A Mexican has turned up who says that he with others discovered and worked eight silver ledges in that vicinity fifteen years, but was driven off by Indians. A large number of prospectors have been out, and they report the discovery of some rich ledges.... Our placer mines, about 14 miles up City creek, are attracting considerable attention. Friday, Saturday and Sunday a large number of persons went out to them, and yesterday over a hundred left for the same point. Several have returned, and the facts, as we learn from them, are substantially as follows: No one has reached the bed-rock yet, but on the surface and six feet down the dirt pays from three to ten cents per pan, and they will have to dig down fifteen or twenty feet yet before striking the bed-rock. The men who are at the mines are nearly all experienced, energetic miners and we can rely on a full development of the mines at any rate, and a few days more will tell what they amount to.

Virginia.

The editor of the Lynchburg *News* (Sept. 15th) writes that he has just visited the salt works near Abingdon, Virginia, which are situated in a charming valley, "marred only by the monuments of war's devastations which everywhere present themselves to the view in the wreck and ruin of numberless furnaces 'where salt was wont to be made.' The party were scattered around visiting and examining the various objects of interest that presented themselves. The wells from which the never-ceasing pumps forced the saturated water, the furnaces in which these waters are concentrated into the snowy crystals, the storehouses where in immense banks the glistening salt is accumulated, and the packing rooms in which it is put up in bags for transportation".... "Assuming," he says, "the Salt Works as the centre of a circle, with a radius of fifty miles, more elements of prosperity and material wealth can be found within this area, than can be paralleled by any other spot on earth. Inexhaustible fertility of soil, and unsurpassed salubrity of climate, immense deposits of salt, gypsum, lime, iron, lead, zinc, tin, plumbago and coal, combine to render it really and truly a favored portion of man's heritage."

British Columbia.

A letter was received lately from Carnes Creek says: We had a long and rough trip, and did not reach the Columbia until the 28th of April, since which time we have been prospecting until the last fortnight, when we located on Carnes Creek; we have taken out a few ounces already, but the water is very high at present and we can't tell how it may turn out. There have been about 1,500 men in the country, but I don't suppose that there are more than half that number here at present. As usual one-half of the men who come into the country swear that the mines are a bilk, and leave without doing a single days prospecting. There is nothing more known of the country than was known last fall; the diggings, as far as is yet known, are very limited; but I have no doubt fresh discoveries will be made as soon as the high waters are over so that men can prospect to advantage. There have been so many going down the Columbia lately that the merchants did not send up any freight on the steamer this last trip, and the consequence was that flour rose immediately from 45c. to 55c. per lb., and other things in proportion. In conclusion, I should advise you not to think of coming this way at present, but I have no doubt things will look brighter before the summer is over, anyway.

Immense Sulphur Deposit.

The Philadelphia *Commercial List*, publishes the report of W. C. Roberts, who has just returned from a thorough exploration of the volcanic island of Saba in the West Indies, after having secured for the Saba Sulphur Company exclusive control of the extensive tracts upon which sulphur exists. He estimates the quantity as "inexhaustible." The quality of this sulphur is superior; many analyses of the company's first invoice, received at this port per brig Thomas Walter, yield from 62.20 per cent. to 88.33 per cent. of pure sulphur from the native ore—giving quite as high an average as the Sicily sulphur "No. 2," which is now so largely imported, and which is quoted in our prices current as of ready sale at sixty to sixty-four dollars per ton.

New Iron Rollers, Coal Cutters, Etc.

The London *Mining Journal* says that at the Dudley and Midland exhibition, there are ten cases of articles manufactured from Messrs. Lones Brothers' patent steel-coated iron. The invention consists in rolling all qualities of iron with an even and perfectly adhering coating of steel on all its sides, the operation being regulated according to the purpose for which the iron is required. The advantage this gives is that the iron by this process can be made applicable to all the purposes for which steel is employed; and, further, the fibrous tenacity of the iron underneath its coating of steel renders it strong and durable to a degree that makes it almost invaluable for such articles as tuyres and axle-trees. As an instance of this, Messrs. Lones exhibit a 1¾-in. mail steel-coated axle-tree, which stood 55 blows with a 25 lb. hammer, after it had been case-hardened. A 1⅛-in. chain, made under the same process, stood a test of 35 tons, the Admiralty test for the same size being 15 tons, 5 cwts. Messrs. Carrett and Marshall's Coal-Cutting Machine is also shown, and as it is to be introduced in a Cannock Chase pit, its qualities will be more appreciated than they are now. The machine consists of an immense number of wheels, surmounted by a large, moveable beam, for the purpose of obtaining a purchase upon the roof of the seam of coal. These cog-wheels are attached to a kind of mighty piston-rod (armed with cutters), which is moved backwards and forwards, gradually being brought to a complete circle by the wheels. Thus, it will be seen that by the time the machine has finished its round of operation, an immense amount of coal will have become loosened, and fit for gathering. It possesses the power of self-acting by hydraulic pressure, and will cut into or under any seam of coal, however high, or at any angle, making 15 strokes per minute at 300 lbs. pressure. It is also suitable for deep levels, for any gradient, cutting either right or left, with but little wear and tear. The samples of chain cables, made by machinery, and exhibited by Mr. Homfray, of Hales Owen, are remarkable for their strength and uniformity of size, the latter qual-

ity being attributable to the machine. A piece of 1¼ in. cable has borne the Admiralty test of 40 tons. Another feature of this stall is chains made from Bessemer steel, and welded by machinery—a fact hitherto deemed impossible. Mr. Griffith's new Puddling Machine is also shown. The part of the machine most likely to attract the attention of practical men is the handle, by which the iron is moved in the furnace. This is affixed to a small crane, situated upon the top of the furnace, and which gradually works round in a very eccentric manner upon four wrought-iron balls. These being fixed under the table, the moment the table begins to move, the handle swings round, and the fiery mass is at once stirred up in a manner which would be impossible by mere manual labor. Puddlers themselves speak highly of the machine where it is in use, the distance they are enabled to stand from the fire being a great relief. Near the furnace are five or six large sheets of iron, rolled by Messrs. Ambrose, Beard and Son, Bilston, and made from iron puddled by the furnace above alluded to. They are 10 feet long, and weigh 19 lbs. each, being the largest of that guage and weight rolled.

GOLD.

COMPANY.	SHARES.	STOCK.	SITUATION OF MINE.	SECRETARY & PLACE OF BUSINESS.
Acadia			Nova Scotia	H. W. Nelson, 24 City Ex., Boston.
Ada Elmore	200,000	$2,000,000	South Boise, Idaho	B. Lawrence. 157 B'way, N. Y.
Amber	300,000	300,000	Greene Co., Penn	Geo. W. Grove. 276 S. Third, Phil
Albion		300,000	Halifax, Nova Scotia	H. W. Nelson, 24 City Ex., Boston.
Alps	100,000	250,000	Illinois Central Dist., Col.	J. Stanton, Jr., 25 Nassau, N. Y.
Ascot	50,000	5,000,000	Sherbrooke, Canada E.	G. H. Morrison, 17 Nassau, N. Y.
Atlantic				Chas. Barett, 13 Doane, Boston.
Atlatic & Pacific	50,000	5,000,000	Hunabolbt T., Humboldt co.	J. N. Sewall, 8 Broad, N. Y.
American	100,000	5,000,000	Gregory Dist.	
American Flag	60,000	600,000	Nevada Dist., Col.	H. Foles, 71 B'way, N. Y.
Astor	200,000	1,000,000	On Comstock Lode	J. Chapman, 71 Broadway, N. Y.
Baltic			Colorado	New York.
Bates & Baxter			Colorado	New York.
Bay State	200,000		Colorado	Lem'l Bangs, Boston.
Benton	100,000	500,000	Colorado	F. W. Capen. 44 Ex. Pl., N. Y.
Black Hawk	50,000	5,000,000	Gilpin co., Col.	D. Littlejohn. 81 John, N. Y.
Beacon		500,000	Halifax co., Nova Scotia	J. B. Post, 20 Ex. Pl., N. Y.
Bobtail	100,000	1,000,000		J. Stanton, Jr., 25 Nassau, N. Y.
Briggs	10,000	1,000,000	Gilpin co., Col.	D. Littlejohn, 81 John, N. Y.
Bradshaw	250,000	1,000,000	Yavapai County, Arizona	O. H. Conover, 219 Dock st., Phil.
Burroughs	100,000	1,000,000		L. Bangs. 22 Pine, N. Y.
Bullion	200,000	1,000,000	Bannock, Montana	69 Liberty, N. Y.
Bullion Consoli.	300,000	300,000	Summit and Clear Creek., Col.	J. P. Whitney, 19 Lindall, Boston
Calvin	200,000	1,000,000	Clear Creek co., Col.	
Canadian				A. Call, 7 Phœnix B'l'g, Boston.
Chem. Gold & S. R				64 B'way
Ch. Un. Gold Co.	240,000	1,200,000		Jesse G. Pitts, 69 Liberty
Chebucto	100,000	500,000	12 miles from Halifax	J. E. M. Gilley, Boston.
Clarendon		500,000	5 miles from Halifax	H. Deane. 41 State, Boston.
Chase	5,000	500,000	Colorado	W. E. Lawton, 81 John, N. Y.
Central Gold M.	20,000	1,000,000	Central City, Col.	L. Bangs. 17 Nassau, N. Y.
Central Mining	200,000	1,000,000	Colorado	46 Exchange Pl., N. Y.
Chandiere	100,000	500,000	5,000 A Famine Riv, C. E.	Wm. B. Fowle, Boston.
Cobden	100,000	1,000,000	Idaho	New York.
Colonial				W. N. Ely, 7 Trav'r B'l'g, Boston.
Colorado Boston			Colorado	R. C. M'Laughlin, 60 State, Bos'n.
Colorado N. Y.			Colorado	12 Pine, N. Y.
Coleman			Colorado	New York.
Columbia	30,000	3,000,000	Austin City, Nevada	10 Pine, N. Y.
Consuelo Gold				54 William.
Consol Gregory	50,000	5,000,000	Gregory Dist., Col.	30 Pine, N. Y.
Cook & Kimball	1,000	150,000	Colorado	W. W. Baldwin. 35 Wm., N. Y.
Copalmine	250,000	5,000,000	Parke co., Col.	J. C. Stocker, 157 B'way, N. Y.
Corrisannee	100,000	1,000,000	Colorado	New York.
Commonwealth			Nevada	Philadelphia.
Corrydonn	100,000	2,500,000	Gilpin co., Col.	46 Exchange Pl., N. Y.
Continental	20,000	2,000,000	Gregory Dist., Col	115 Liberty, N. Y.
Central Gold	200,000	1,000,000		L. Bangs, 22 Pine, N. Y.
Dauphin & Colo.	200,000	1,000,000	Colorado	John S. McMullin, 423 Walnut, Pa.
Day & Bushnell	300,000	3,000,000	Colorado	T. Chalmers, Jr., 20 Ex. Pl., N. Y.
De Lery		10,000,000	Chandiere Valley, Canada E.	J. M. Winchell, 72 Cedar, N. Y.
Denver	50,000	1,000,000	Gilpin & Clear Creek, Col.	J. Wadsworth, 61 Cedar, N. Y.
Devonshire				W. Stockbridge. 74 Fr'klin, Bos'n.
Downieville	300,000	300,000	Colorado	J. C. Harriott, 70 Wall, N. Y.
Dorset			Chandiere River, C. E.	F. McJimsey, 59 Wm., N. Y.
Eagle	100,000	1,000,000	Gold Dirt Dist., Col.	J. P. Davies, 81 John, N. Y.
East Bannack	100,000	200,000	Bannack City, Montana	J. Callender. 48 Ex. Pl., N. Y.
Eldorado	500,000	2,500,000	San A Dist., 9 miles of Austin	208 S. Fourth, Phila.
Empire Mill & M				O. F. Griffin, San Francisco.
Enriqueta			Arizona	New York.
Esperanza		500,000	Star D., Humboldt co.	117 Broadway, N. Y.
Etna		500,000	Nevada Dist., Col.	C. W. Bryant, Boston.
Excelsior	30,000	300,000	Central City, Col.	J. Weatherbee, Jr., 11 P. B'g, Bos.
Fairmount	20,000	200,000	Colorado	John P. Harker, 109 N. 6th, Phil.
Famine Falls	100,000	1,000,000		D. L. Dodge, 80 B'way, N. Y.
Garrisons	100,000	5,000,000	Colorado	C. G. Mease, 29 William, N. Y.
Gem	25,000	1,250,000		H. K. Gates, 191 B'way, N. Y.
Georgetown			Colorado	New York.
Gilbert River				C. E. Jackson, 18 Phe'x B'g, Bos'n.
Gilpin				C. W. Galloupe, 76 State, Boston.
Golconda	250,000	5,000,000	Sherbrooke, Canada E	W. H. Adams, 19 Broad, N.Y.
Gold Field				C. B. Cowling, 39 Kilby, Boston.
Gold Rock	5,000	500,000	Central City, Colorado	R. M. Lockwood, 113 Wall, N. Y.
Gold Hill	50,000	500,000	Colorado	W. T. Eustis, Boston.
Gold Mountain	600,000	6,000,000	Clear Creek Co., Colorado	25 Nassau, New York.
Gold Min'g of Col	50,000	5,000,000	Colorado	E. Latham, 23 William, N. Y.
Golden Gate	60,000	600,000	Sum., Hight'd & Mill C. D., Mon	J. Morse, Jr., 117 B'way, N. Y.
Gunnel Central			Colorado	70 Broadway, N. Y.
Gunnel Gold	300,000	3,000,000	Colorado	F. E. Roelfson, 78 & 80 B'way, N.Y.
Gregory	20,000	1,000,000	Colorado	Thos. Wildes. 17 William, N. Y.
Granada	50,000	125,000	Colorado	J. Stanton, Jr., 25 Nassau, N. Y.
Great Western	60,000	600,000	Russel Dist., Col.	E. Kemeys, 70 Broadway, N. Y.
Gunnel Gold	100,000	1,000,000	Colorado	F. E. Roelofson, 78 B'way, N. Y.
Halifax				A. Case, 7 Phœnix B'l'g, Boston.
Ha'mony				Demas Barnes, 21 Park Row.
Hemit'ge Ranch	30,000	300,000	El Dorado, Cal.	
Home	80,000	2,000,000	G'ld Dirt Lode, Gilp. co., Col.	J. P. Davies, 81 John, N. Y.
Holman	150,000	300,000	Clear Creek co., Col.	J. O'Neill, 23 Wm, N. Y.
Humboldt	100,000	500,000	Colorado	78 B'way.
Idaho Gold	100,000		Montana	5 Pine, N. Y.
Isaac's Harbor	100,000	500,000	Isaac's Harbor, Nova Scotia	W. F. Shirley, 137 B'way, N. Y.
Isle Royale				44 Ex. Pl.
Kansas Colorado	100,000	1,000,000	Colorado	J. G. Greenlies, 111 B'way, N. Y.
Kent				G. H Wyman, 19 Phe'x B'l'g, Bos.
Kip & Buell	100,000	200,000	Colorado	J. C. Harriott, 70 Wall, N. Y.
Knickerbocker	100,000	1,000,000	Colorado	F. Avery, 78 B'way, N. Y.
La Crosse	100,000	$1,000,000	Nevada Dist., Colorado	H Fales, 71 B'way, N. Y.
Liebig	200,000	$1,000,000	Colorado	
Lake Major	12,000	600,000	Nova Scotia	Frod. Franck, 113 Water, N. Y.
Mariposa Gold	100,000	10,000,000	Bear Valley, Cal.	G. W. Farlee, 54 Wall, N. Y.
Mammoth	50,000	500,000	Colorado	J. Jarrett, 41 Liberty, N. Y.
Manhattan	100,000	600,000	Colorado	W. R. Lothrop, 172 B'way, N. Y.
Massachus tts	250,000	200,000	Gilpin co., Col.	W. D. Briggs. 11 Phe'x B'l'g, Bos
Merchants	30,000	600,000	Alturas co., Idaho	Jas. K. Selleck, 157 B'way, N. Y.
Metropolitan				
Mountain Pride	100,000	1,000,000	Fr Ck, St. Bse., Idaho	29 Pine, N. Y.
Montague	50,000	500,000	near Halifax, Nova Scotia	C. B. Cowling, 39 Kilby, Boston.
Mount Alpine			Griffith Dist., Clear Ck., Col.	J. B. Randol, N. Y.
Mount Vernon	500,000	5,000,000	Mt. V. & Mam'th Dist., Nev.	25 Park Row, N. Y.
Mount Vista	50,000	500,000		J. Chapman, 23 Nassau, N. Y.
Montana	100,000	400,000	Nevada, Hls., Greg'y, Col.	A. L. Guerber, 54 Wm, N. Y.
Monte Christo	100,000	2,000,000	White Pine District, Nev.	Thos. Dunlap, 413 Chestnut, Phil.
Montezuma	100,000	500,000	Colorado	F. B. Webster, Boston.
Montrose	100,000	1,000,000	Clear Creek co., Col.	C. A. W. Sibley, 80 B'way, N. Y.
Morning Star	5,000	5,000,000	Owyhee co., Idaho	E. M. Barnum, 137 B'way, N. Y.
Mexican Pacific	100,000	10,000,000	Mexico	J. Mackie, 88 Wall, N. Y.
Melones & Stan			Calaveras co	606 Mont, San Francisco.
National	300,000	3,000,000	on So. Boulder C'k, Col.	31 School, Boston.
Nevada Star				25 Pine, N. Y.
New England	50,000	150,000	Black Hawk, Col.	J. Weatherbee, Jr., Boston.
New Mexico			near SantaFe	
New Gregory				W. A. Kent, 144 State, Boston
New York City	50,000	5,000,000	G'd Canon Pl't, Lead, co. Nev	10 Pine, N. Y.
New York Dist.	50,000	500,000	Austin, N. Y. Dist., Nevada	71 B'way, N. Y.
New York of Col	0 0,000	1,000,000	Colorado	F. E. Roelson. 74 B'way, N. Y.
N. Y. & Nevada	100,000	1,000,000	Nevada	J. J. Osborn, 30 Pine, N. Y.
N. Y. G Min'g	100,000	1,000,000	Colorado	F. E. Roelofson, 78 & 80 B'way.
N. Y. & Eldor'do	250,000	2,500,000	Nevada	G. H. Munroe. 106 B'way, N. Y.
N. Y. & Idaho			Idaho	180 Chatham, N. Y.
N. Y. & Santa Fe			Nevada	New York.
N.Y. & Owyhee		1,000,000	Owyhee co., Idaho	6 Pine, N. Y.
N. Y. & Ore Hao	10,000	1,000,000	Owyhee co., Idaho	137 Broadway, N. Y.
N. Y. & Ree e R			Nevada	New York.
N. Y. & Renfew				2 Murray, N. Y.
N. Y. & Washoe			Nevada	New York.
North Clear Ck	100,000	1,000,000	Gilpin co., Col.	J. Francis, 80 B'way, N. Y.
Nova Scotia				Chas. Barrett, 13 Doane, Boston
N. Y. & Nova Sc	100,000	1,000,000	Tangier, Nova Scotia	Jos. E. Gay, 3 Hanover, N. Y.
National S Min'g		1,500,000	Owyhee co., Idaho	115 B'way, N. Y.
Occidental	5,000	500,000	Nevada & Hls. C. Dist., Col.	160 B'way, N. Y.
Oldhata				Chas. Barrett, 13 Doane, Boston.
Ophir	62,500	625,000	on Comstock Lode, Nevada	Moses A. Hopcock, 45 William.
Pacific	40,000	4,000,000		24 Pine, N. Y.
People's	100,000	5,000,000	Alpine & Sierra cos.	23 Nassau.
Peck				E. R. Sawyer, 144 State, Boston.
Perigo	60,000	3,000,000	Ind. Dist., Gilpin co., Col.	J. W. Stratton, 90 B'way, N. Y.
Pine Mountain	30,000	3,000,000	Pine Mountain Dist., Nev.	F. K. McCully, 157 B'way, N. Y.
Pioneer & Inskip			Buena Vista Dist., Nevada	15 Nassau, N. Y.
Phila. & Color'do	20,000	1,000,000	Central City, Col.	E. W. Clark & Co., Phila.
Phelps & Gilm're	200,000	1,000,000	Colorado	W. H. Steudevant, 25 Nassau.
Pleasant Valley	125,000	1,250,000	Colorado	J. S. Lyon, 69 Wall, N. Y.
Pontiac	50,000	1,000,000	Ill. Cen. M Dist., Col.	R. H. Rickard, 19 Nassau.
Prescott	100,000	1,000,000	Central Arizona	69 B'way, N. Y.
Quaker City			Ind't D't. G'd D't City, Col.	103 South Third, Phila.
Quartz Hill	40,000	100,000	Nevada Dist., Col.	J. A. Tyler, 29 Wall, N. Y.
Rancho C'k	10,200	1,200,000	Pine Wood Dist., Nevada	18 Broad, N. Y.
Realito		1,600,000	G'd Hill D., Storey co., Nev.	117 B'way, N. Y.
Reese River Pr'l	100,000	1,000,000	AmadorDist., Lander Co., Nev.	Elijah Aldiger, 67 Wall, N. Y.
Renfrew				W. Stockbridge, 74 F'klin, Bos'n.
Republic	15,000	1,500,000	Amador D., Lander co., Nev.	67 Exchange Pl., N. Y.
Rocky Mountain	50,000	500,000	Grey & Empire Dists., Col.	E. L. Boiles, 70 B'way, N. Y.
Reciprocity	100,000	1,000,000	Canada East	B. B. Grant, Jr., 71 B'way, N. Y
Scorpion			Virginia City, Nevada	617 Clay, San Francisco.
Sherbrooke	100,000	1,000,000	Sherbrooke, Canada East	F. Schumacker, Cliff, N. Y.
Silas Wright	60,000	600,000	Amador D., Lander co., Nev.	18 Wall, N.
Silver State	100,000	500,000	Humb't Starr. Pr. R. D Humb't co., Nevada	R. S. Miller, 98 William, N. Y.
Silver Wave	300,000	3,000,000	Reese riv., Lander co., Nev.	Emmet Blair, 243 B'way, N. Y.
Smith & P'mlee	125,000	2,500,000	Colorado	G. A. Lathrop, 4 Broad, N. Y.
Smithfield	100,000	400,000	Gilpin Co., Col.	A. F. Baum 48 Broad st., N. Y.
Spanish		3,000,000	La Plata, Churchill co., Nev.	228 South Third, Phila.
So. Clear C'k			Colorado	Canastota, N. Y.
Starlight Ledge	50,000	500,000	P'ville, El Dorado co.	
Star of Color	200,000	2,000,000	Colorado	J. N. Powers. 22 Pine, N. Y.
Standard	50,000	500,000	Gregory Dist., Col	T. A. Mitchell, 70 B'way, N. Y.
Steptoe	20,000	2,000,000	G'd. Can., Lander co., Nev.	19 Pine, N. Y.
Sterling City		1,200,000	Colorado	New York.
Stewart	100,000	500,000	Colorado	C. Durham, 31 Exchange, Boston
Suffolk				Carlos Cobb. 22 William, N. Y.
Southard				Wm. Wallace, 11 Doane, Boston.
Stafford				C. E. Jackson. 15 Central, Boston.
Tascher	100,000	1,000,000	Colorado	F. J. Wright, 8 Wall, N. Y.
Texas	50,000	500,000	Black Hawk City, Colorado.	Wm. E. Parish, 155 B'way, N. Y
Triunfo			San Antonio, L. Cal.	San Francisco.
Union	240,000	12,000,000	Colorado	F. A. Potts. 110 B'way.
United States	75,000	1,500,000	Colorado	J. P. Stevens, N. Y.
University				31 Nassau, N. Y.
Virginia City	250,000	250,000	Nevada	J. B. William, 78 & 80 B'way.
Wauba Yuma	600,000	6,000,000	Arizona	35 William, N. Y.
Waddingham	48,000	1,200,000	Alturas co., Idaho	Jas. K. Selleck, 157 B'way, N.
Waverley				J. Leighton, 97 State, Boston.
Windsor Gold M	10,000	100,000	Colorado	25 William, N. Y
Wilson & Cass			Colorado	New York

LEAD.

COMPANY.	SHARES.	STOCK.	SITUATION OF MINE.	SECRETARY & PLACE OF BUSINESS.
Amenia	100,000	$ 500,000	Duchess co., N. Y.	G. Furman, 77 Cedar, N. Y.
Bucks County	10,000	200,000	Bucks co., Pa.	R. R. Sinclair. 53 Ex. Pl., N. Y.
Canada	40,000	250,000	Canada	Alb. Case, 7 Phe'x B'l'g, Boston.
Clute	150,000	550,000	Macomb T. St. Law. co., N. Y.	Bev'l'y S. Merrill, 42 Cedar, N.Y.
Continental	200,000	500,000	Martinsburg, N. Y.	J. Sickles, 57 Ex. Pl., N. Y.
Eastport	100,000	1,000,000	Eastport, Me.	R. Vose, 54 William, N. Y.
Erie	40,000	4,000,000	Orange co., N. Y.	Ogden Gaul, 25 Pine, N. Y.
Hampton	100,000	500,000	Hampshire co., Mass.	C. W. Bryant, Boston.
Jefferson				65 Wall, N. Y.
King's Hill	0 ,000	50,000		W. L. Haskin, 180 B'way, N. Y.
Lake Superior	200,000	1,000,000	Secs. 5 & 26 T., 49 & 50 R., 28 & 29 Marquette co, Mich.	C. L. Mather, N. Y.
Lancaster	50,000	250,000	Lancaster co., Pa.	J. R. Sibley. 35 Pine, N. Y.
Macomb	10,000	550,000	Macomb T. St. Law. co., N. Y.	C. E. Scofield, 42 Cedar, N. Y.
Maine	50,000	500,000	Eastport, Me.	A. L. Butler, 54 William, N. Y.
Mineral Point	100,000	500,000	St. Lawrence co., N. Y.	H. W. Warren, 60 City Ex., B'stn.
Morgan	100,000	500,000		W. Williams, 42 Cedar, N. Y
Manhan				40 B'way, N. Y.
Mount Hope	80,000	200,000	Mt. Hope, Orange co., N. Y.	W. Williams, 24 Pine, N. Y.
New Hampshire	100,000	500,000	New Hampshire	W. A. Farrar, 71 B'way, N. Y.
N. Y. & Boston		1,000,000	Chester co., Pa.	S. M. Cockein, 22 William, N. Y.
Oswegatchie				24 Pine, N. Y.
Owens Lake	50,000	250,000		C. W. Bond, 78 Cedar, N. Y.
Phœnix	50,000	250,000	Columbia Co., N. Y.	G. W. Butler, 54 William, N. Y.
Placentia Bay	200,000	1,000,000	Newfoundland	J. Simpkins, 29 Wall, N. Y.
Ramsay	20,000	500,000	Township Ramsay, C. W.	C. W. Bryant, Boston.
Rochester	200,000	500,000		J. A. Ferguson, 8 Wall, N. Y
Rossie				24 Pine, N. Y.
Rosa Clara	100,000	1,000,000		H. Lathrop, 25 Nassau, N. Y.
St. Clair	100,000	1,000,000		H. B. Hawkins, 25 Nassau, N. Y
St. Joseph	100,000	1,000,000	St. Francis Co., Missouri.	Jas. R. Knapp, 6 Broad, N. Y.
Shawangunk	100,000	500,000	Mt. Hope, Orange co., N. Y.	E. P. Ackerman, 48 Pine, N. Y
Sussex	25,000	625,000	Sparta Town. Sus'x co., N. J.	F. H. Stow, 53 Cedar, N. Y.
Walkill			Orange co., N. Y.	W. A. Scott. 11 Wall, N. Y.
Warren			Warren, Gratton co., N. H.	J. S. Christie. 100 B'way, N Y
White Mountain			New Hampshire	111 B'way, N. Y.

SILVER.

COMPANY.	SHARES.	STOCKS.	LOCATION OF PROPERTY.	SEC'Y AND PLACE OF BUSINESS.
Amazon	25,000	$250,000	Nevada	W. L. Louther, 134 So. 3d, Phil.
Argentine	50,000	250,000	Argentine Dist., Colorado	D. L. Demmon, 134 State, Boston
Arizona	100,000	10,000,000	22 m W of Tubac, Arizona	J. B. Randol, 25 Nassau, N. Y
Astor	200,000	1,000,000	On Comstock Lode, Nev	J. Chapman, 71 Broadway, N. Y.
Atlantic & Pac.	50,000	1,000,000	Humboldt T. Hum't Co, Nev.	J. N. Sewall, 8 Broad st., N. Y.
Big Smoky	20,000	600,000	Smk'y Hill, Lander Co. Nev.	71 B'way.
Black Eagle	7,000	350,000	Carson, Owyhee co., Idaho.	O. D. Gardner, 40 Maiden lane.
Bullion	200,000	1,000,000	Bannock, Moutano	55 Liberty street.
Bush	50,000	500,000	Austin City, Nevada	176 Chambers st., N. Y.
Combination	5,000,000	50,000	Nevada	J. W. Stoute, Jr., 155 B'way, N.Y
Colorado Con.			Cedar Hill Nevada	New York.
Columbia	30,000	3,000,000	Austin City, Nevada	J. E. Smith, 10 Pine street, N. Y.
Com. & Nevada	120,000	1,250,000	Averill, Churchill Co. Nev.	49 Liberty street, N. Y.
Commonwealth	200,000	2,000,000	Gold Hill, Nevada	78 B'way, N. Y.
Cosmos	10,000		Owyhee Co, Idaho	137 Broadway, N. Y.
Del Norte & S'br.			Lower California	New York.
Durango	5,000	500,000		W. R. Garrison, 73 W'm st., N Y.
East Bannock	100,000	200,000	Bannock City, Montano	J. Callender, 49 Ex. P., N. Y.
Empire G. & S.	100,000	10,000,000	Bodie Bluff, Mono	H. R. Gates, 191 Broad'y, N. Y.
Empire and Silver State	20,000	2,000,000	Reese River Dist., Nevada	57 B'way, New York.
Eldorado	500,000	2,500,000	San A 90 m s of Austin, Nev	208 South Fourth street, Phila.
Essex & Dialem	125,000	2,500,000	Sierra dis, Humboldt C. Nev.	A. R. Wetmore, 81 Vesey st, N.Y.
Franklin			Nevada	Philadelphia.
Gem	200,000	1,250,000		H. K. Gates, 191 B'way, N. Y.
Globe	100,000	500,000	Austin, Nevada	J. W. Brazier, 26 Pine, N. Y.
Good Hope	20,000	1,000,000	40 m S of Austin, Nevada	80 Broadway, N. Y.
Huron			Montano	New York.
Incas	300,000	300,000	Summit co., Colorado	J. P. Whitney, 19 Lindall, Bost.
Knickerb'r and Nevada	20,000	2,000,000	Union Dis, Nye Co, Nev	H. R. Shotwell, 70 Cedar, N. Y.
Lander Hill			Nevada	74 B'way, New York.
Lincoln		1,000,000	Owyhee Co, Idaho	80 Broadway, N. Y.
Lw'r California	40,000	2,000,000	North Part of Lower Cal.	55 William street, N. Y.
Madison	30,000	3,000,000	Nevada	W. W. Perkins, 71 B'dway, N. Y.
Macedon			Nevada	Philadelphia.
Manhattan			Nevada	57 B'way, New York.
Merchants	30,000	600,000	Alturas Co. Idaho	157 Broadway, N. Y.
Metropolitan	15,000	1,500,000	Austin City, Nevada	158 Broadway, N. Y.
Morning Star	5,000	5,000,000	Owyhee County, Idaho	137 Broadway, N. Y.
Mount Vernon	500,000	5,000,000	Mount Vernon & Mammoth District, Nevada	New York.
Mount Vista	50,000	500,000		J. Chapman, 71 Bway, New York.
National	15,000	1,500,000	Owyhee Co. Idaho	115 Broadway, N. Y.
Nevada	100,000	300,000	Mountain Wells, D. Ch. co Nev	325 Walnut street, Phila.
Nevada	20,000	1,200,000	Nevada	E. L. Bolles, 74 B'way, N. Y.
New Y'k & Ione	20,000	2,000,000	Ione City, Nye Co., Nev	71 Broadway, N. Y.
New York	1,500	1,500,000	Austin, Nevada	S. R. Hutchinson, 80 B'way, N.Y.
New York City	50,000	5,000,000	Gold Can Dist. Lander Co. N.	10 Pine street, New York.
New Y'k Dis't	50,000	5,000,000	80 m f'm Austin, N. Y. Dis. Nevada	S. A. Hopkins, 71 Broadway, N Y
New Y'k & Nev.	10,000	1,000,000	Nevada	J. J. Osborn, 30 Pine street, N. Y
N. Y. & Owyhee		1,000,000	Owyhee Co. Idaho	6 Pine street, New York.
N.Y. & Oro Fino	10,000	1,000,000	do. do.	137 Broadway, New York.
N. Y. and Silver Peak	20,000	2,000,000	Nye County, Nevada	R. C. Root, 74 Broadway, N. Y.
N Y. & Santa Fe			Nevada	New York.
N. Y. & Washoe			Nevada	New York.
North Am. M'g			Nevada	Philadelphia.
Ocean Transit		1,500,000	Lower California, Mexico	24 Pine, N. Y.
Ophir			On Comstock Lode, Nev	
Pah Ranagat C'l	50,000	5,000,000	Nevada	26 Pine, N. Y.
People's	100,000	500,000	Alpine & Sierra Counties	8 Pine street, New York.
Phœnix	200,000	2,000,000		48 East 26th street, New York.
Pacacho	50,000	2,000,000	Arizona	T. H. Perkins, New York.
Pine Mount'n	30,000	3,000,000	Pine Mount'n Dist. Nev	F. K. McCulley, 160 Bd'way, N. Y.
Pioneer & Inskip			Buena Vista Dis., Austin, Nev	15 Nassau street, New York.
Prescott	50,000	2,500,000	Arizona	T. H. Perkins, New York.
Presidential	125,000	2,500,000	Austin, Nevada	Wm. Lemmon, 17 Broad, N. Y.
Republic	15,000	1,500,000	Amador, D Lander Co. Nev.	67 Ex. Place, New York.
Revenue Exten.	50,000	500,000	Lander County, Nevada	W. L. Kite, 142 South 4th, Phila.
Rosario & Carmn	5,244	1,480,000	Sinaloa, Mexico	San Francisco.
San Antonio	60,000	3,000,000	Arizona	C. Lamson, 21 Nassau st., N. Y.
Seminole	7,000	1,500,000	Unionv., Humboldt Co. Nev	L. G. Wilkin, 119 B'way, N. Y.
Silas Wright	60,000	600,000	Amador, D Lander Co, Nev.	18 Wall street, New York.
Silver Hill	40,000	1,000,000	Nevada	J. C. Hitchcock, 62 B'dway, N.Y.
Silver Series		1,000,000	Lander Co., Nevada	W. B. Rogers, 117 B'way, N. Y.
South Boise, T Co	200,000	2,000,000	Alturas Co., Idaho	A. M. Palmer, 19 Broad st., N. Y
Star Hill	20,000	1,000,000	Nevada	155 B'way.
St'h Cl'r Crk			Colorado	Canastota, New York.
Stephenson	500,000	1,000,000	18 m E of Ft. Fillmore	A. S. Kellogg, 22 Pine, New York.
Steptoe	20,000	2,000,000	Gold Can. Lander Co. Nev.	10 Pine, New York.
Sterling City		1,200,000		New York.
Tarshish	12,000	1,200,000	Toryabee Range, Un. D., Nev	H. S. M'Collum, 78 B'way, N. Y
Tempest	200,000	1,000,000		L. Bangs, 17 Nassau, N. Y.
Trumfo			San Antonio, Lo'wr Cal	San Francisco.
Tolyabee		5,000,000	Pine W'd, Mn'tn Dis. Nev	J. M. Brown, 157 B'wy, N. Y.
Union & El Do.	100,000	1,000,000	Mogul Silver Mn'tn	40 Park Row.
Upper Missouri		100,000	Montana	107 Broadway.
Vedder	21,000	2,100,000	Amador Dist., Nevada	L. G. Bingham, 80 B'way, N.Y.
Wamba Yuma	600,000	6,000,000	Arizona	35 William street, New York.
War Eagle	50,000	200,000	Owyhee Co., Idaho	G. M. Eldridge, 144 S. 4th, Pl.
Washington	22,500	2,250,000	Austin, Nevada	S. R. Hutchinson, 80 B'way, N.Y.
White Mountain			New Hampshire	111 Broadway, New York.

COPPER.

COMPANY.	SHARES.	CAPITAL.	SITUATION OF PROPERTY	SEC'Y., AND PLACE OF BUSINESS.
Adventure,	20,000		Parts of Sections 35, 36, T. 51, N Range 38 W,	W. H. Smith, 51 Ex. Pl, N. Y.
Etna,	20,000		1226 A in Secs. 6, 7, 18, T. 58, N R 2, W Keweenaw co. Mich.	B. A. Hoopes, 324 Walnut St., Phil.
Alb'ny & Bost'n,	20,000		Secs. 7, 8, 9, 10, 11, T. 55, R. 33	Fred. Beck, 45 City Ex., Boston.
Anita,	20,000		Del Norte co., California,	S Wall St., N. Y.
Algonah,	20,000		W½ S. 30, T. 51, R. 57,	L. W. Clark, Boston.
Allouez,	20,000		Town 57, R. 32, sec. 34,	Horatio Bigelow, Boston.
Amy g'd'y'd'l.,	20,000		E¼ Secs. 16, 21, T. 58, R. 20, NW¼ Sec. 5, T. 57, R. 31, 160 A.	F. H. Womrath, 324 Walnut St., Philadelphia.
Arcadian,	20,000		NW¼ Sec. 20, T. 57, R. 33, 160 A,	C. P. Dixon, 48 Pine St. N. Y.
Astor,	20,000		NW¼ Sec. 5, T. 57, R. 31 160 A,	A. W. Boardman, 35 Court St., Boston.
Atlas,	20,000		NE¼ of E½ & NW¼ of NW¼ Sec. 31, T. 57, R. 31,	L. W. Clark, Boston.
Aztec,	20,000		W½ Sec. 31, T. 51, N. of R. 37,	L. W. Clark, Boston.
Bay State,	20,000		SW¼ Sec. 29, T. 58, R. 31,	L. W. Clark, Boston.
Beaver,	20,000		NE¼ Sec. 32, T. 58, R. 31,	A. W. Boardman, Boston.
Bohemian,	20,000		E½ Sec. 31, NW¼ Sec. 32, T. 51, R. 37, W,	R. H. Rickard, 21 Nassau St., N Y.
Boston,	20,000			H. W. Warren, 60 City Ex., B'st'n.
Canada,	00,000		Brome co., Canada East,	H. P. Mount, 3 Hanover St., N. Y.
Carp Lake, M.,	20,000		T. 51, N. R. 43, W. S½ of N½ of N. Sec. 14, and E¼ Sec. 23, and NE¼ Sec. 23, 440 A,	W. H. Abel, 70 Wall St., N. Y.
Cascade, M.	20,000		SW¼ Sec. 9, T. 49, N. R. 39, W, in Ontonagon co., Mich.,	G. F. Riley, 35 Wall St., N. Y.
Copper Creek,	1,000	$100,000	Missouri,	H. M. Thompson, Missouri, Mo.
Copper Falls,	20,000		Sec. 14, T. 58, N. R. 31, W, Keewenah Point,	97 State, Boston.
Copper Harbor,	20,000		S½ Sec. 10, T. 58, R. 28, 320 A. Keewenah co.,	Fred. Beck, 43 City Ex., Boston.
Copper Creek,	20,000	500,000	Douglas co., Wisconsin,	T. B. Lawson, 71 Broadway, N. Y.
Central,	20,000	500,000	E½ Sec. 23, T. 58, N. R. 31, W,	J. Stanton Jr., 25 Nassau, N. Y.
Cornwall,			Strafford, Orange co., Vt.,	D. H. Whitney, 17 State St., B'n.
Continental,	200,000	500,000	Martinsburg, New York,	J. Sickles, 50 Ex. Pl., N. Y.
Corinth,	20,000	500,000	Corinth, Orange co., Vermont,	W. A. Cleveland, 191 B'way, N.Y.
Copper Hill,			Wisconsin,	Boston.
Dacotah,	20,000		Sec. 35, T. 55, R. 34, Portage Lake,	J. M. Cooper, Milk St., Boston.
Delaware,	20,000	500,000		S. M. May, 326 Walnut St., B'st'n.
Derby,			Ontonagon co., Mich.,	P. C. Blancan, 35 Wall St., N. Y.
Dorchester,	20,000		800 A.,	51 and 52 City Ex., Boston.
Douglas,	20,000		E¼ Sec. 30, T. 55, R. 3,	S. J. Edwards, William St., N. Y.
Dudley,				H. Bigelow 43. City Ex., Boston.
Eagle River,	20,000		T. 58, R. 31, Secs. 28, 29, 33, 34,	A. Lamson, 70 State St., Boston.
Ely,	00,000	500,000	325 A., Richmond, Canada East,	Ernest Sacchi, 82 B'way, N. Y.
Empire,	20,000		1798 A., Secs. 1, 2, 11, 12, T. 58, N. K. 28, W. K'w'n co., Min.,	J. S. McMullin, 423 Walnut, Phil.
Eureka,	20,000		W½ Sec. 2, T. 49, N. R. 41, W. Ontonagon co.,	H. Shirley, 157 B'way, N. Y.
Evergreen Bluff,	20,000		NE¼ Sec. 6, T. 50, R. 38,	F. W. Capen, 44 Ex. Pl., N. Y.
Flint Steel R.,	20,000		Sec. 11, 12, T. 50, N. R. 39, W,	F. K. McCully, 157 B'way, N.Y.
Forest City,	20,000		320 A. NE¼ Sec. 36, and SE¼ Sec. 25, T. 51, R. 43,	J. F. Paul, 19 Phœnix Building, Boston.
Franklin,	20,000		¼ Sec. 24, T. 55, N. R. 31 W.,	C. Emery, 26 Kilby St., Boston.
Franconia,	60,000	300,000	New Hampshire,	J. Hunni, 162 Fulton St., N. Y.
French Creek,	00,000		Chester co., Pennsylvania,	R. Roberts, 19 Nassau St., N. Y.
Garden City,	20,000		SW¼ Sec. 60, N. W. Sec. 59, T. 58, N. R. 31 W,	R. H. Howe, Chicago.
Girard,	20,000		600 A. Sec. 15, T. 58, N. R. 28, W. Keweenaw co., Mich.,	B. A. Hoopes, 324 Walnut, Phil.
Gr'd Portage,	20,000		SW¼ Sec. 36, R. 34, W,	A. S. Kellogg, 22 Pine St., N. Y.
Great Western,	20,000		SE¼ Sec. 30, & SW¼ Sec. 29, T. 21, K. 320 A., Ontonagon	J. M. Cooper, 24 City Ex., B'st'n.
Hamilton,	20,000		SE¼ Sec. 35, S½ Sec. 36, T. 50, R. 41, SW¼ Sec. 21, R. 20, 14¼ A.,	J. B. Townsend, 44 Exchange, N. Y.
Hancock,	20,000		SW¼ Sec. 26, Tract of Sec. 25, T. 5, R. 34, W.,	Fred. Beck, 43 City Ex., Boston.
Hanover,	20,000			do. do. do. do.
Hartford,	20,000	500,000	320 A. E½ & SE¼ Sec. 32, SW¼ & W½ Sec. 33, T. 50, R. 40, W,	T. M. Tyng, 61 Cedar St., Boston.
Henwood,			Michigan,	57 Broadway, N. Y.
Hope,	20,000	50,000	240 acres in T 57, R 32, Kw co.	19 Nassau St., New York.
Humboldt,	20,000		Sec. 21, T. 58, R. 31, W,	Hor. Bigelow, 43 City Ex., B'st'n.
Hudson,	20,000		Ontonagon co.,	P. C. Blancan, 35 Wall St., N. Y.
Huron,	20,000		Sec. 2, T. 54, R. 34, W,	Hor. Bigelow, 43 City Ex., B'st'n.
Isle Royale,	20,000		NW¼ Sec. 1, T. 54, R. 34, W,	F. W. Chapen, 33 Ex. Pl., Boston.
Keweenaw,	20,000	500,000	Michigan,	F. W. Chapen, 44 Ex. Pl., Boston.
Knowlton,	20,000		SE¼ Sec. 1, W½ of SW½ Sec. 1, and other lands,	44 Ex. Pl., N. Y.
Lafayette,	20,000		Secs. 25, 30, 36, T. 51, N. R. 43, and 44, W, Ontonagon,	P. C. Blancan, 35 Wall St., N. Y.
Lyster,	200,000	$400,000	Township Nelson, Canada East,	H. W. Nelson, 24 City Ex., B'st'n
Lower California	40,000	2,000,000	N. part of Lower California,	55 William St., N. Y.
Madison,	20,000		Part sec. 18, 19 entire. 30, 31.	Fred. Beck, 45 City Ex., B'st'n.
Merryweather,	20,000		Secs. 9, 19, T. 48, N. R. 4, W.	J. T. Waters, New York.
Mandan,	20,000		680 A. Secs. 8, 17, 19, 30, T. 58, N. R. 29, W., Keweenaw co., Min.,	B. A. Hoopes, 324 Walnut, Phil.
Manhattan,	20,000		W½ Sec. 11, NW¼ Sec. 14, T. 58, N. R. 32, W, 360 A.	J. W. Davies, 21 Nassau St., N Y
Mendotta,	100,000	500,000		M. Taylor, 30 Wall St., N. Y.
Mass. M. Co.,	20,000		SW¼ Sec. 7, T. 50, N.R. 38, W,	J. M. Cooper, Pittsburgh.
Mesnard,	20,000		NE¼ Sec. 24, T. 55, R. 34,	L. Burr, 12 Phœnix B'gs, Boston.
Melones & Stan.,			Calaveras co.,	606 Mont St., San Francisco?
Minnesota,	20,000		Sec. 15, T. 50, N. R. 39, W,	S. M. Pond, 12 Pine St., N. Y.
Maryland,			Maryland,	Baltimore.
Merrimac,	20,000		NW¼ Sec. 34, T. 51, R. 38, W, Ontonagon,	J. M. Mills, 284 Pearl St., N. Y
National,	20,000		Sec. 16. T. 50. R. 39. W. 1.988 A.	J. M. Cooper, Pittsburgh.
Native,	20,000		Keweenaw Point, Michigan,	
Nashua,	50,000	100,000	320 A. N. Ontonagon.	W. F. Hardy, 27 City Ex., B'st'n.
Nebraska,	20,000		NE¼ Sec. 12, T. 50, and other lands,	S. W. J. Webb, 54 Wall St., N. Y.
Nequakett,	20,000		Sec. 26, T. 51, R. 43.	G. S. Frost, Detroit.
New York,	20,000		240 A. SE¼ Sec. 10, E½ NE½ Sec. 15,	H. W. Nelson, 24 City Ex., B'st'n.
New Burra,			Baltimore,	R. Roberts, 19 Nassau St., N. Y.
New Jersey Con.	100,000	1,000,000	New Jersey,	W. Bowes, 68 Wall St., N. Y.
N. Y. & Passaic,	100,000		Harrison, Bergen c.,	T. H. Belt, Jr. 23 William St. N.Y
New Devon,				T. H. Belt, Jo, do. do.
North Western,	20,000		W½ Secs. 24. 25. 26, E½ Secs. 36. 35. T. 58. N.R. 31.	17 William St., N. Y.
Norwich,	20,000	500,000	Secs. 11. 12. T. 40, N.R. 39, W. and other lands. 1,300 A.,	J. M. Cooper, Boston and Detroit.
Ogema,	20,000	500,000	NW¼ Sec. 6. T. 50. N.R. 33.W.	P. C. Blancan, 35 Wall St., N. Y.
Ontonagon,	20,000		631 A. Secs. 20. 21. 28. T. 50 N. R. 39. W. Rockland, Ontonagon,	G. E. Leffingwell, 7 Pine, N. Y.
Ont'n'g'n, Mass.	20,000			G. Hart, 11 Pine Street. N. Y.
Otisville,	100,000	500,000	Otisville, Orange co., N. Y.	William D. Williams. Michigan.
Penn. Manuf'g.,	20,000	1,000,000	4,320 A. Secs. 13. 14. 15. 24. ½ Secs. 10. 11. 12. 23. 25. T. 58. N. R. 30. W.	C. Windsor, 69 Wall St., N. Y.
Pewabic,	20,000		W½ Sec. 25. T. 55. N.R. 34. W.	S. M. Day. 326 Walnut St., Phil.
Pitts. & Boston,	20,000		Ts. 58. 57, N. R. 31, 32, W. 12,495 A.	C. Emery, 39 State, Boston.
Pontiac,	20,000		SE¼ Sec. 13. T. 55. N. S. 31, W.	H. A. Johnston. Pittsburgh.
Portage Lake,	20,000		Houghton co, Michigan,	C. Emery. Kilbey St., Boston.
Prescott,	100,000	1,000,000	Central Arizona,	22 William St., N. Y.
Providence,	20,000	500,000	240 A. in Keweenah co. NW¼ Sec. 10. W½ NW¼ Sec. 10. T. 57, R. 32. W.	69 Broadway, N. Y.
Phila. & Boston,	20,000		640 A. Sec. 14. T. 58. N. R. 28.W. Keweenaw co., Mich.	J. W. Davis, 21 Nassau St., N. Y.
Quincy,	20,000		Sec. 26, T. 54. N. R. 34. W,	J. S. McMullin, 423 Walnut St., Boston.
Republic,	8,000	200,000		W. H. Smith, 51 Ex. Pl., N. Y.
Reliance,	20,000		Secs. 21, 22, 27, T. 58, N. R. 28, W, 10,785 A.	H. Baldwin, 70 Wall St., N. Y.
Rochester,	200,000	500,000		H. K. Thomas, 11 Wall St., N. Y
Ridge,	10,000		Sec. 35. T. 51. R. 38. W,	J. A. Ferguson, 8 Wall St., N. Y
Rockland,	20,000		Sec. 11. T. 50. R. 39.	51 Exchange Place, N. Y.
Resolute,	20,000		1,120 A. Secs. 7. 18. 19. T. 58, N. R. 29. W. Keweenaw co., Mich,	S. J. W. Barry, 71 B'way, N.Y.
St. Mary,	20,000			F. Beck. 45 City Ex., Boston.
St. Margaret,	200,000	1,000,000	Canada.	E. B. Sutton, 43 Pine, N.Y.
Sharon,	20,000		Ontonagon co., Mich.,	P. C. Blancan, 35 Wall St., N. Y.
Sheldon & Col.,	20,000		SE¼ Sec. 36. T. 55. R. 34.W.	S. J. Edwards, 22 W'm. St., N. Y.
South Side,			SE¼ Sec. 34. T. 55. R. 34. W.	H. W. Nelson, Boston.
Societe Fran'se,	10,000		T. 58, 59, N. R. 28, 30 W,	Copper Harbor.
Suffolk,	20,000			Carlos Cobb, 22 William St., N.Y
Superior,	20,000		W¼ Sec. 14. T. 50. N.R. 39,W.	S. J. W. Barry. 12 Pine St., N. Y
Toltec Consol.,	20,000		Secs. 25, 26, R. 50, R. 36,	H. W. Nelson, Boston.
Union,	20,000	500,000		A. S. Kellogg, 22 Pine St., N. Y
Ural,			Wisconsin,	17 William st., N. Y.
Vulcan,	20,000		1,120 A. Secs. 7. 17. 18. T. 58, N.R. 27. W. Keweenaw co.,	F. K. Womrath, 324 Walnut, Phil.
Victoria,	20,000		Secs. 29, 29, 30, 34, 34. T. 50, R. 39, and other lands,	L. W. Clarke, Boston.
W. Minnesota,	20,000		Secs. 17, 18, 19, T. 50, N. R. 39, W.	C. T. Howard, Boston.
Wickopee,	100,000	500,000	Massachusetts,	G. A. Sneden, 12 PineSt., N. Y
Vermont,	100,000	500,000	W. Fairlee, Orange co., Vt.,	191 B'way, N. Y.
Wauka Yuma,	600,000	6,000,000	Arizona,	35 William St., N. Y.

S, means section; T, townsip R, range.

AMERICAN
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[ILLUSTRATED.]

GEORGE FRANCIS DAWSON,
EDITOR

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NEW YORK, SATURDAY, SEPTEMBER 22.

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TO SUBSCRIBERS.

The first volume of the AMERICAN JOURNAL OF MINING closes with this number. Grateful for the large and increasing patronage and good wishes that have made our task light, we beg leave to remind our many half-yearly subscribers that now is the time to renew their subscriptions, if they desire so to do.

DISCUSSION EXTRAORDINARY ON "MINES!"—A SLEEPY SOCIETY, AND HOW TO AWAKEN IT.

Attracted thither by published announcement that there would be a discussion upon "The Gold and Silver mines of California and Nevada," and an invitation to see a collection of minerals there exhibited, we attended a meeting of the New York Association for the Advancement of Science and Art, held at their rooms in the Cooper Institute, last Monday evening. We went there fully impressed with the idea that a treat awaited us—a discussion perhaps upon the origin of the metalliferous veins in those States; perhaps upon the metallurgical treatment of their contained ores; perhaps upon the laws of tenure; perhaps upon the methods of working; perhaps upon their probable duration and coming yields; perhaps upon the influence that their discovery and successful working has exerted with regard to commerce, civilization, etc.; perhaps touching upon all these:—a discussion participated in by half a dozen or a dozen men of marked ability; men who had come prepared to give in most succint shape, forcible and perhaps new ideas as well as facts inaccessible to ordinary mortals like ourself; men every word of whose utterance would make its imprint on the royal road of science. As by the friction of flint with flint light is evolved, so, thought we, this promised friction of brain with brain, must evolve scientific scintillations, bright and imperishable, photographed as they would be in the columns of the JOURNAL OF MINING. In short we hoped to learn something; and doubtless the majority of the thirty persons present at the rooms at the commencement of the "discussion" were imbued with the same desire. Well, the association being called to order, etc., the committee on candidates reported in favor of admitting somebody to membership. The question upon his admission resulted in the following remarkable vote: Ayes 1, Noes 0. So the ayes had it, and the member was *unanimously* elected! Now this was a staggerer to commence with! "Can it be possible," thought our critical half, "that these learned scientists have so contemptible an idea of their own society that they feel little or no interest as to who becomes a member?" "No! No!" replied our more charitable half, "it must be that these great minds are far away, wandering through the realms of thought, deep in chlorides, sub-chlorides, sulphurets, disintegrators, desulphurizers, fissure veins, eruptive rocks, metamorphosed conglomerates, argillaceous states, lenticular or ellipsoidal patches, etc. However the discussion is about to commence. Listen!" The Secretary arose; spoke of the collection as being one of the largest and finest in the country; and, declaring that he didn't intend to make a speech, made one of over an hour and a half in length—dull, prosy, commonplace, with scarcely a redeeming feature, full of repetitions, and sprinkled with untenable and even ridiculous assertions—the effect of which was to make many smile, and to thin the audience down to a baker's dozen. A few remarks were make by others upon the subject of purchasing the collection—which we really hope will be done, as it will form an admirable nucleus for a collection worthy of this great city—and then (after a siege of nearly two mortal hours) the Secretary commenced another long-winded statement relative to a piece of the inner bark of a Southern tree. The advertised subject of discussion: "The Gold and Silver Mines of California and Nevada," was almost utterly ignored; but few words were spoken relative to the mines of Nevada, (those only that are situated on the Comstock lode,) and not one word about those of California. Unfortunately, as we have already intimated, even the mineral cabinet, as a theme, was unworthily handled. As will be seen in the report of the Secretary's address, on the next page:

The value of such a collection, he urged over and over again, would be: That persons thinking of investing in any of the mines therein represented, would be able to do so with greater security after seeing the cabinet ores taken from said mines. In this manner the collection would be of immense service to mining companies, the country at large, and New York city, the commercial centre of that country.

Could there be, by any possibility, a more absurd statement than this? There may be some average rock from the Comstock in this collection, but we are very certain that Mr. Henley himself would admit that nearly the whole of it is composed of "choice" or "picked" specimen rock. How, then, could *any* estimate be formed of the value of a mine therein represented, by the mere inspection or even assay of the specimen? A mine to be at all fairly represented, as to its real value, should furnish a slice of the average of the lode, or else pieces of average ore from every class thereof, with a statement of the average relation in point of bulk that each class bears to the other. Even then only a poor approximation could be made. This collection, to be sure, will be of great value, but not in the manner indicated. However, we do not propose to go further into that matter at present. What we now wish to say is, that if the meeting alluded to furnishes a fair indication of what is usually said and done at these "discussions," the Association does little or nothing "for the Advancement of Science and the Arts;" abuses the liberality of Peter Cooper and the other Trustees of his Institute; and the sooner it is made to give way to a society alive to the scientific issues of the day, the better. We trust, however, that the Association is only "asleep," so to speak, and that their Secretary—who appears to be a very excellent, well-meaning, and nice old gentleman, who perhaps did his best under the circumstances—will awaken members to a livelier interest in, and more thorough preparation for the discussions. We are in hearty accord with the objects of the Association. We wish it and everybody connected with it success in the laudable endeavor to advance science and art. But we were surprised and mortified at the spectacle of last Monday evening; and desiring as we do to see the Society useful, respected, and honored, we have thought it a duty to publish the facts, to the end that some change in its conduction be speedily made. At present its meetings are fast degenerating into the farcical. Let officers of the Society—instead of attempting to blow their own trumpets—personally and urgently solicit the most learned gentlemen in, as well as outside of the Society, to prepare papers to be read before, and afterwards discussed by, the Society. Let there be rules also, *strictly enforced*, limiting discussion to the points at issue, and the persons engaged in debate, to say five minutes each. Then, we think, the Association for the Advancement of Science and the Arts, will become truly worthy of its honorable though lengthy name; and we shall be afflicted no more with "speeches against time," wherein a great deal of talking is done, but very little is said.

IMPROVED TUNNELS FOR UNDERGROUND CITY RAILROADS.

We learn from Mr. Joseph Dixon, of 51 Liberty street, this city, that he has applied for a patent upon an improvement in the method of constructing Tunnels for Underground Railroads, especially adapted to cities. Instead of sinking shafts and tunneling *under* the surface of the earth, as has been customary in European cities, he proposes to *excavate from the surface* along the entire line of proposed railroad, and lower into the open cut thus formed, tubular iron sections, which, when jointed, will form a water-tight tunnel, to be lighted by gas within. Where the earth is rocky, he proposes simply to timber it with iron arches. At necessary distances iron shafts are to rise to the height of a lamp-post, and to be adorned with lamps. He claims that his plan is superior to any other in the greater rapidity of construction, and less likelihood of injury to adjoining property. The only objection we see to it is that during its construction street traffic must be more or less interfered with along its line. We should judge that Mr. Dixon has drawn his inspiration from the method of laying the great Croton water iron pipes along the upper part of Eighth avenue; but it is none the less excellent for that.

☞ The heat which would raise 1 lb. of water through any number of degrees of temperature, would heat 9 lbs. of iron to the same extent.

SCIENTIFIC MEETINGS.

SOME REMARKABLE STATEMENTS—NEVADA AND OTHER MINERALS—THE SUTRO TUNNEL.

The first meeting of the association for the advancement of science and the arts, since the summer recess, was held last Monday evening. After the reading and approval of the minutes, the Secretary, Dr. Gale, made extended remarks in connection with a large, and really interesting mineralogical collection brought from the far West, by Mr. Henley, of Nevada. The Dr. stated at great length, that the collection embraced specimens (in what proportions he did not say) from all the Pacific States and Territories of the United States, and from Mexico—principally, however, from the State of Nevada; that five years had been consumed in perfecting it; that it was so fine a collection, that if allowed to slip through our hands now, he doubted whether New York would ever be able to secure so good an one; and that he therefore hoped the proper steps would be taken to secure and place it in the Society's rooms at the Cooper Institute, or at the School of Mines. Columbia College, or some other central location, The value of such a collection, he urged over and over again, would be that persons thinking of investing in any of the mines therein represented, would be able to do so with greater security, after seeing the cabinet ores taken from said mines. (?) In this manner, the collection would be of immense service to mining companies, the country at large, and New York City, the commercial centre of that country. He therefore hoped that mining companies and bureaus would club together and purchase the collection. He said also that previous to 1846, the traveller who had passed through those countries had reported an absence of precious metals. Since that time, however, $500,000,000 had been gathered thence. The metallic produce of this continent usually occurs in belts following the north and south slopes of the mountains. The same condition is observed on this eastern side of the Apalachian ridge, sometimes one belt, at other times, two, three or more parallel belts, the belts being more numerous the further we progress south. (During the past few months, he mentioned that one of these belts has been traced immediately below the falls of the Potomac, crossing the river in three small veins, and several shafts have been sunk for the purpose of extracting the ore.) The Comstock is the most noted of the argentiferous belts of Nevada. It is of great and increasing richness. Not less than $50,000,000 of silver have already been taken thence.

The Doctor then endeavored to explain a diagram of the great Sutro tunnel, which is to cut the Comstock lode; but subsequently called Mr. Henley to his assistance, who stated that the cost of pumping the water from the mines on that lode, exceeds the cost of extracting the ore. (?) Hence the mine-owners had contracted with Mr. Sutro, to run a tunnel from Dayton—four miles from Virginia City—to strike the lode at a depth of 2000 feet. From the point of intersection, drifts or galleries would be run along the lode as far as necessary to right and left. Besides draining the lode of water, which will be used for running mills at its mouth, ore will be transported through the tunnel.

Dr. Gale then stated certain facts from the last report of the Surveyor General of Nevada. Among them, that at present, 22,000 cords of wood are annually used for the purpose of working the 76 mills connected with the lode, which have a capacity for crushing 1800 tons of ore per day; to which he added that on account of the scarcity of wood and water, some of the mills are fourteen miles (?) away from the mine, indicating heavy expenses for cartage in that rough country, and no doubt the wood cannot hold out very long, so that there is the more need for the water-power obtainable by means of this tunnel. (The water from this tunnel can hardly be asked to rnn more than enough mills to keep a single mine, that we might mention, well worked).

A gentleman asked if any peat had been found in Nevada. It had been found in rocky New Hampshire; why not there? (We imagine that Nevada is too volcanic in its origin to admit of peaty formations.)

Dr. Gale here went off into a long and irrelevant statement as to the decrease of timber all over the country, and ended by saying that he did not know whether peat had been found in Nevada.

Another gentleman remarked that coal had been fonnd in that State. (Not in sufficient quantity, nor of the right kind to be of much service, if we remember aright.)

Dr. Gale then offered a resolution to aid in the purchase of the mineral collection, and after again praising it as one of the finest on the continent, told an anecdote to prove that the mere inspection of a piece of rock is not sufficient to prove its worth, and that chemical analysis is the thing. The story amounted to this: that a gentleman arranged with him to go to Maryland and report upon a certain gold quartz vein on his farm. The Dr. went. Meantime the gentleman had shown the rock to a Cornish miner (a pretty person to show gold rock to!) who said there was nothing in it. When the Dr. arrived, the gentleman repudiated the bargain. The Dr. however took a piece of the rock, assayed it, found it contained over $6 per ton, and got his pay from somebody else, who bought the vein for a mere trifle.

Dr. Davis and another gentleman warmly recommended favorable action on the resolution.

A gentleman, without wishing to disparage this collection, happened to know of a much larger one for sale in North Carolina, although he wouldn't undertake to say that it was better, because not sufficiently *au fait* in such matters. He hoped both would be bought.

A "practical" gentleman spoke of the value of such a collection, although very severe on theoretical knowledge.

Another gentleman, apparently of British antecedents, hit the right nail on the head when he hoped this collection would be purchased as a *nucleus* of one that would be worthy of this great city. Why in Montreal, Canada, there was a collection (Sir William Logan's) that filled a three-story house. He hoped that there would be in New York City before long, a mineralogical cabinet that would fill not a room, nor a suite of rooms, but a *whole h use*.

Mr. Henley explained that his collection numbered some 5000 or 6000 specimens, gathered at much trouble and expense, not because he was a mineralogist, but because that was his particular hobby. He brought it here intending to take it to the Paris Exhibition, hoping to be appointed Commissioner, but had been disappointed. Hence he wanted to sell it and return to his home in Dayton, where he has a duplicate cabinet of minerals.

The resolution was then adopted.

Dr. Gale then commenced what threatened to be a long dissertation upon a piece of the inner bark of a South American tree, during which we retired.

MINING COMPANY'S DIVIDENDS.

The Imperial Silver Mining Company, of Nevada, has declared a dividend of $6 in gold, payable on demand.

The Eureka Lake and Yuba Canal Company, a quarterly dividend of $2 50 per share in gold, at the Office of the Company, 34 New street.

The Tarr Farm Petroleum Company, a dividend of 1 per cent. at 10 Pine street, N. Y.

The St. Johns Oil Company, of Rochester, Pa., a dividend of 3½ per cent. on demand.

MEETINGS.

New York and Amador Silver Mining Company, trustees, at 71 Broadway, 24th inst., at 11 A. M.

New York and Fishkill Iron Company, trustees, at 166 Broadway, on 24th inst., at 12 M.

National Mining Company, of Lake Superior, directors, at Pittsburgh, on October 1.

Commonwealth Oil Company, trustees, at 71 Broadway; Sept. 24, at 1 P. M.

Manhattan Petroleum, trustees, at 71 Broadway, on Oct. 1, at 1 P. M.

French Locomotives.

Ten of the locomotives made by Messrs. Schneider & Co., of Le Creusot, France, for the Great Eastern Railway Company, have arrived at Stratford. Seven have already made their preparatory trial under steam under the conditions customary in England, and have given highly satisfactory results. In finish and excellence of workmanship these machines apparently rank with any made by first class makers in this country, and they bear sufficient testimony to the great strides made by French engineering firms during the last few years.

Original Papers.

[PREPARED FOR THE JOURNAL OF MINING.]*

THE UTILIZATION OF SODIUM IN GOLD AND SILVER AMALGAMATION.

By Professor HENRY WURTZ, of New York.

[CONTINUED FROM OUR LAST.]

In the special correspondence of the San Francisco *Mining and Scientific Press*, of May 12, 1865, in speaking of the Church Union Gold Co., in El Dorado county, it is said that "Mr. Jessup, the agent and correspondent of the company, informed me that the Superintendent had also been very successful in the use of sodium in amalgamating, not only within the batteries, but also elsewhere whenever used, both of these gentlemen testifying in its favor and taking the greatest possible pains to point out its advantages.'

The same paper, under date of May 26, 1866, speaking of the Yuba mill and mine, in Yuba county says:

Mr. Leland (the Superintendent) acting from suggestions in your journal, has been giving attention to the action of sodium-amalgam, and is satisfied that it is just the thing for saving the gold in the fine flour state.

Late advices received through the public prints from the great Gould & Curry mine and mill, state that in the month of May this mill crushed and amalgamated 3,600 tons of rock, which worked with 11 per cent. of the assays. This statement become very significant when it is known that, as my private correspondence shows, Mr. Louis Janin, the Superintendent of the Gould & Curry, has for many months been *making sodium* in a small way, for the use of his mill. The (Colorado) Black Hawk *Mining Journa* of June 26, 1866, says:

By the use of sodium-amalgam the yield of the Narragansett mill has been increased more than thirty per cent.

And in the issue of July 3d, further details are given of the results in this mill, as follows:

In one section of twenty heavy stamps Mr. Emery (the Superintendent) used the sodium-amalgam for two batteries, and the common mercury for the other two, during a run of three days obtaining from the former five ounces of amalgam more than from the latter, which retorted $6 50 an ounce, or $32 50 in all.

It was also remarked that probably "this result would be better with more experience." A remark which may be pronounced emphatically sensible and correct. I may add that, as the Naragansett mill consists of forty stamps, if sodium were used in all, according to even these first crude results, the annual yield of this mill would be increased (allowing twenty-five days for cleaning up,) by nearly $15,000 in gold, equal to $375 per head of stamps. With these ores, however, far better results will be attained by amalgamation in pans, or by some other method involving a degree of comminution far greater than that of the battery. The *Journal* of the same date says also:

Mr. John P. Bruce is running his old twelve-stamp mill, two batteries, six stamps in each. For four days last week he used the mercury treated by sodium-amalgam in one battery, and common mercury in the other. He got 1 oz. 19 dwts. more gold in the former than in the latter.

This is about $40 more in gold, or an increase of about $560 per annum per head of stamps. Letters have also been received from Mr. Bruce, who is one of the oldest and most reliable of the Colorado millmen. In one he says, after relating the above result in his battery:

I am putting into the mill one of the Bertola pans, and will have it running this week. I expect big results from the amalgam with the pan. I think every mill in the mountains would use the amalgam if anybody had it to sell.

Later, under date of July 17, Bruce says:

Everybody believes the amalgam to be the best thing yet, and everybody would buy it were it for sale here. You can rest assured the amalgam is all right. Last week I used ½ oz. of amalgam to two pounds of quick (quicksilver), and I think a ½ oz. to 2 lbs. is better than 8 oz. to 2 lbs. quick.

Under a still later date, July 30th, Mr. Bruce says:

The amalgam is doing nicely for me. The longer I run the mill with it, the better I like it. The ore is what we call white quartz, with some copper and white iron pyrites. The Black Hawk Company like the amalgam very much, and they will use it all the time. Col. Graffin has some to try on his ore soon. I will send reports from him as soon as I can get them. Everybody thinks well of the amalgam that has had it, with two or three exceptions, and I think they did not care to use it.

A recent letter from Prof. Wm. P. Blake, of San Francisco, says:

Sodium-amalgam is growing in favor, though many have not been pleased with the alloy they have used.

Appearing to imply that those parties who have been infringing upon my patents have palmed off upon the miners impure or spurious preparations.

American metallurgists, however, are not altogether unanimous in admitting all the advantages I claim for sodium. Kustel, known as the author of a work on gold and silver metallurgy, seems bitterly opposed to its use upon silver ores. In his experiments, however, Kustel has fallen into the error that the use of sodium, to quote from him, "in the *decomposition* of silver ores" is based upon "its ardent desire for combination with oxygen, sulphur, etc." It was never proposed by me to use sodium for the *decomposition* of silver or any other ores. The addition of sodium to the quicksilver used in amalgamating silver ores, in sufficient proportion to enhance the adhesion of the quicksilver to the metallic silver which has already been separated from the sulphides, etc., by other agencies, will be found highly beneficial, as well as the addition of magnitic quicksilver to a pulp or slime which contains floured or pastry silver-amalgam diffused throughout its mass, for the purpose of collecting and incorporating the silver-amalgam into one mass. Should enough sodium be present to produce the decomposing effect on the silver sulphides by sheer force of chemical affinity, which Kustel regards as the object of the invention, the real object would inevitably be defeated, as the quicksilver would then become loaded with the baser metals and other impurities, which would destroy its amalgamating power altogether. This is evidently what has actually taken place in some experiments on silver ores which Kustel reports in the San Francisco *Mining Press* of March 31st, 1866, in which he obtained with sodium but one-third as much silver from a given ore as without it. Kustel's results, therefore, having been founded upon on incorrect idea of the mode of employment of the sodium, have no applicability, either *pro* or *con*. His statement that contact with iron "highly increases the rapidity of the decomposition of water by sodium-amalgam," is at variance with my own observations, which have generally tended to precisely the opposite conclusion; and his inference therefrom that, therefore, iron pans cannot be used with sodium, is shown to be fallacious by numerous practical results on record. Another fanciful objection of Kustel's is "amalgamation with the iron of the stamps or shoes." I have shown that no "amalgamation" of iron takes place, but a merely transient enfilming, which is extremely beneficial instead of prejudicial. Kustel admits the prevention of the flouring of the quicksilver, and concedes also that "one or two pounds of sodium in a ton of quicksilver will doubtless show good results if *gold quartz* is treated with it properly."

* Read before the Buffalo meeting of the American Association for the Advancement of Science, Aug. 20th, 1866.

[CONCLUDED IN OUR NEXT.]

[WRITTEN FOR THE JOURNAL OF MINING.]

LEAD FIELDS OF THE UPPER MISSISSIPPI—No. 12.

By J. Vancleve Phillips, M.E.

ITS DYNAMICS.

The writer in the February number of the *Mining Magazine*, N. Y., 1854, published the three following fixed laws to the dynamics of the Lead Fields of the Upper Mississippi:

FIRST LAW.

The water courses follow and correspond to the lines of elevating forces, or anticlinal lines of axes of the lead field.

SECOND LAW.

The amount of dip of the lead measures is governed by the distance between the lines of axes of the lead field. The nearer these lines of the same magnitude the greater the dip, and *vice versa*.

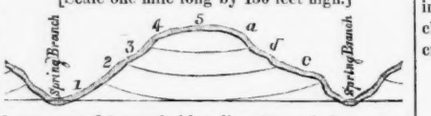
THIRD LAW.

The elevating and abrading forces have acted along the same lines and with corresponding degrees of power.

These laws were discovered accidentally in 1847, while engaged in exploring for lead ores near Mineral Point, Wis. What is known as the upper sandstone, which rock underlies the lead measures, was noticed to dip each way from a small spring branch. The dip was about 10 degrees with a plane of the horizon. This dip revealed the fact that an elevating force had at one time acted under the bed of the stream. A short time afterwards, exploring along another creek, about one mile distant, the same sandstone and same dip was noticed. These creeks ran parallel, following denuded vallies—the ridge between being about 150 feet altitude above the streams. The dip from these two points showed that the lowest point in the lead measures was under the centre of this dividing ridge; that the water courses followed the anticlinal lines of axis, and the centre of the ridge marked the Synclinal lines of axis; that the ridge was a basin of lead measures. This was three years prior to my study of written geology.

SECTION ACROSS THIS RIDGE:

[Scale one mile long by 150 feet high.]



1, upper sandstone; 2, blue limestone; 3, lower galena limestone; 4, upper galena limestone; 5*, cap rock; *a*, gash veins; *b*, pipe veins; *c*, stratified veins. There had been some twenty different lead mines worked in this ridge—the ores working in veins in the three measures marked *a*, *b*, *c*. The largest veins had been mined near the summit of the ridge. What had appeared as a great mystery was, that the largest veins of lead ore should be found on the highest grounds. Yet the discovery of the dip of the lead measures showed that the highest ground was the deepest part of the basin of rock; and the supposition was, that the nearer the centre of the dip or Synclinal line of axis, the stronger the lead-producing action. This was subsequently proved to be correct. Some three years after noticing this dip, the same principles were found to apply to the lead measures in the south part of the lead field, distant some fifty miles, and that the Mississippi river opposite Dubuque followed an anticlinal line of axis. The laws, as stated, were first published in 1854. Realizing the advantages that must accrue to mining, as a science, if these laws were correct, the three years following were spent in observations in the great lead fields of Missouri; and at the expiration of that time, the laws were identified in the dynamics of that field. This discovery has eliminated the following great principles, connected with the economical geology of these two great continental lead fields:

FIRST.

The lead measures are thrown in a series of basins, these being from three hundred yards up to several miles in width.

SECOND.

The laws connected with the filling or repletion of the lead veins in one of these basins is the key to all the others.

THIRD.

The ores occur in unstratified, stratified, gash and pipe veins.

FOURTH.

The laws of crystalization are duplicated in each basin.

FIFTH.

The veins crop out along the lines of anticlinal axis, and increase in richness towards the synclinal lines of axis.

SIXTH.

The large basins have a shale, impervious to water, that forms a roof or water-shed over the veins.

SEVENTH.

The dips, topography and drainage system of the lead fields is so arranged that there is the greatest amount of ore where there is the least possible amount of water, all things in the geology of the lead field being considered; or, in other words, the quantity of water in circulation beneath the summits of the ridges is in inverse proportion to the depth from the surface, and in direct proportion to the distance from the ridges or water-sheds of the lead fields.

EIGHTH.

Each spring in the lead field has its area of supply, and is fed by the rain-water percolating downwards, that falls on a given district of country.

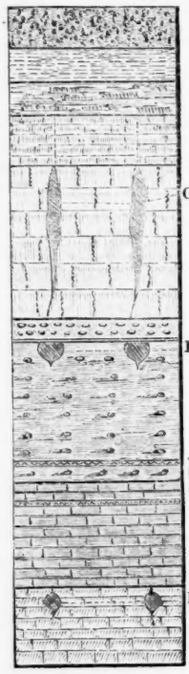
NINTH.

In the true east and west lead veins, the ore is cubic formed. North and south veins, the edges of the cubes are truncated. Stratified and irregular quartering veins, the solid angles of the cubes are truncated. Unstratified veins (being veins worked in the clay), the ores are amorphous and irregular in form.

* The artist has left the cap-rock to the reader's imagination.

TENTH

Classification of lead veins in the Upper Mississippi lead field: "Gash veins;" these lie in parallel fissures, from 50 to 300 feet apart, and are limited in depth to the upper galena limestone. "Pipe veins:" these are found in what is known as the upper green bed opening, among miners, in the lower galena limestone. "Stratified veins:" these make in openings in the blue limestone. "Unstratified veins:" these include the ores worked from the clay, and are the outcrop of the three former types of veins.



The lead ores in the Missouri lead field are found in much the same character of veins—the stratified veins there being imbedded in the solid rock, and when the lead measures are intersected by dykes or porphyry, will lead to what are known as *true veins*. The lead mining in the upper field has all been done in the small basins or along the edges of the larger ones. The field is 50 miles wide and 60 long. The amount of lead produced up to the present time may be set down in round numbers at $50,000,000. It is estimated that this is but a fraction of one per cent. of the lead wealth of the field. The great lead field of Washington, Franklin and Jefferson counties, of Missouri, has about the same area as the first named, the ores were discovered there in 1700. The amount of lead produced is supposed to be about $20,000,000 in value. This is also estimated to be but a fraction of one per cent. of the wealth of that field. There are several other fields in Missouri besides the one named. These vary in extent and richness. The Madison county field is surrounded by hills of porphyry, and has yielded large amounts of lead and nickel. We must suppose that lead mining, as a business, has barely commenced. What has been done in these two fields has almost wholly been accompliished by individual miners. With a better knowledge of the practical geology of the lead districts, it is evident that capital must seek the securing of these lead lands; and when used practically to develope them, we can produce what lead we need for home consumption, and the investment prove more profitable than almost any other branch of industry.

SPECIAL NOTICE.

☞ For the information of our British readers, we are requested to state that circulars of the New York Rock Drill Company, descriptive of the Gardner Rock Drill, with prices, etc., can be obtained at the office of Messrs. Jacot & Co., 19 King's Arms Yard, Moorgate street, London.

MARKET REVIEW.

FRIDAY EVENING.

Mining Stocks—There has been much animation, especially in the lower priced stocks. Corydon has advanced since our last week's review from $4 25 to $5 25; Liberty from 37 to 58c.; Keystone Silver, from 11 to 25c.; Montana, from 32 to 95c.; Gunnell Gold, from $1 10 to $1 35; Walkill Lead, from $2 30 to $2 80, the two latter with very numerous transactions; New York Gold, from $2 05 to $2 75; Smith & Parmelee, from $10 90 to $11 65. Consolidated Gregory has fallen from $17 90 to $17 25; American Flag from $3 05 to $2 80.

Petroleum Stocks have also shared in the rise. Bennehoff Run Oil from $4 to $6 25; United States from $7 80 to $8 35.

Government stocks have receded somewhat during the day; 6 per cent. '67, 132⅞; reg'd '81, 111½; 5.20's '62, 108; 10.40's reg'd 98⅞; 7.30's, 106.

Gold has fallen considerably during the week, the present price is 144¾. Very large importations have arrived and are on their way from Europe. The steamer from Aspinwall yesterday brought $1,215,000. The receipts from California since Jan. 1st are $30,555,943, against $13,314,254 during the corresponding time last year. Foreign exchange is dull and unchanged, Bankers' 60 days drafts on London, 107 @ 3/16c.; short sight, 108 @ 3/16c.

Copper.—There is no change in prices to note; the sales include 400,000 lbs. Portage Lake, mostly for future delivery, at 31 @31½c. The London *Mining Journal* of the 7th inst., describes the trade in England as very active, with sales at £5 to £4 above the official rates, and an advance is expected to be declared by all the smelters ere long.

Iron.—The sales of American No. 1 include 200 tons at $48@$50, and 300 tons No. 2 at $45@46. Of Scotch, Glengarnock to arrive was sold at $46, and 600 tons in lots from yard at $47 for Eglinton; $48 for Glengarnock; and $49 for Gartsherrie. The price of pig in Scotland has advanced to 55s. 6d. cash. The stock here is rather increasing. Bar Iron is unchanged. Old scrap iron $58@$60, and do cast $36@$41.

Lead.—There has been much activity in lead with some speculative movements. The sales extend to 1,800 tons, of which 1,000 are to arrive. The price is mostly 4¾c. gold, in bond, with 300 tons at 6¾c. gold duty paid, and 9⅛c. currency.

Tin is steady with an upward tendency. The sales include 1,000 slabs Straits at 22c.; 200 slabs Banca at 24½c., and 5 tons English at 22½c., all gold. The advices from England to-day are not so favorable, showing a slight decline in price there. The London *Mining Journal* says:

The stock of Banca in Holland, on warrants, on Aug. 31, was 97,850 slabs, against 141,619 slabs same time last year; arrived towards next sale, 138,507 slabs, against 42,668 slabs same time last year. The stock of tin in London on Aug. 31, was 2,762 tons, against 3,410 tons same time last year, and the quantity of Straits afloat in Europe is about 1,275 tons, against 1,413 tons same time last year.

Spelter is firm. Sales are quoted of 100 tons Silesian, mostly at 6⅝c. gold.

Zinc.—Firm and in good demand at 9½c. from store.

Petroleum is dull at 26@26½c., with few sales. Bonded was dull and heavy at 44½c. for Standard White; 43c. for prime light straw to white, and 44@44½c. for standard white.

THE COAL TRADE.

FRIDAY EVENING.

The sales of Foreign Coal have been 275 tons Liverpool House Cannel in lots at $17; 150 tons Orrel at $15; 200 tons Liverpool Gas Coal at $10 50 cash. In Domestic there is no change in price to report, nor any improvement in the trade generally. The excess of arrivals over last year still continues, without a corresponding increase in demand; the market is consequently glutted. A few of the collieries have ceased working. At Broadtop we learn that the coal owners have taken advantage of the slackness to discharge some of the more unmanagable laborers, and are replacing them with English colliers, who are arriving in considerable numbers.

The returns of traffic for the week ending September 15, as compared with those of the corresponding week last year, are as follows:

	1865.		1866.		
	WEEK.	TOTAL.	WEEK.	TOTAL.	INCREASE
P. & Reading R. R....		2,158,068	67,417	2,982,712	824 644
Del & Hudson.....	460	473,532	41,133	954 693	481,161
Schuyl, Can.....	....	584,412	30,848	952,439	368,027
Lehigh Val. R. R....	....	....	....	....	....
Penn. C. C.....	....	....	....	....	....
By R. Road.....		362,486	19,826	259,941	D'CREASE
By Canal.....			827	17,326	85,218
Scranton Sth.....					D'CREASE
Broad T p.....	....	211,897	7,741	192,714	19,183

Prices of Coal by the Cargo.

At New York, Sept. 22, 1866.

Schuylkill Red Ash by Boat Load	$7 25@	$7 50
" Chestnut, " "	4 75	5 25
" White Ash Lump	6 25	6 75
" Steamboat	6 25	6 75
" Broken	6 25	7 00
" Egg	6 75	7 00
" Stove	6 75	7 25
" Chestnut	4 75	5 25
Lehigh White Ash Lump	7 25	....
" Steamboat	7 25	....
" Broken	7 00	....
" Egg	7 00	....
" Stove	7 25	....
" Chestnut	6 25	....

At Philadelphia, Sept. 22, 1866.

Schuylkill Red Ash Prepared	$5 75@	$6 00
" Chestnut	4 00	.. ..
" White Ash Lump and Steamboat	5 25	.. ..
" Broken	5 25	.. ..
" Egg and Stove	5 50	.. ..
" Chestnut	4 00	.. ..
Locust Mt. Lump. Steamboat	5 25	.. ..
" Broken	5 25	.. ..
" Prepared	5 50	.. ..
" Chestnut	4 25	.. ..
Lorberry Coal	6 00	.. ..
Franklin. (Lykens Valley)	6 25	.. ..
Broad Top	5 50	.. ..

Scranton Coal at Elizabethport.

Lump	$6 00@	— —
Steamer	6 10	— —
Grate	6 20	— —
Egg	6 30	— —
Stove	7 00	— —
Chestnut	5 50	— —

Prices for Pittston Coal at Newburgh.

Lump, per ton of 2240 lbs	$6 75	.. ..
Steamer, " " "	6 85	.. ..
Grate " " "	6 90	.. ..
Egg " " "	7 00	.. ..
Stove " " "	7 25	.. ..
Chesnut " " "	6 00	.. ..

70 cents per ton additional for delivery at N. York.

Lehigh Coal at Elizabethport.

Lump	$7 25@	— —
Steamboat and Broken	7 00	— —
Egg and Stove	7 25	— —
Chestnut	6 50	— —

George's Creek and Cumberland Coal.

Run of mine, f. o. b. at Locust Point	$5 75@	.. ..
At Georgetown	5 50	.. ..

At Baltimore, Sept. 22, 1866.

Wilkesbarre & Pittston W A., wholesale	$7 50@	$7 75
" " retail	8 50	8 75
Lykens Valley & Sunbury R A., wholesale	7 50	7 75
" " retail	8 50	8 75

Coal Freights.

From Newburgh.

Stamford	$1 60@	..	Greenbush	$ 55@	..
Norwalk	1 60	..	Coeymans	50	..
Bridgeport	1 60	..	Coxsackie	45	..
New Haven	1 60	..	Stuyvesant	45	..
New London	1 75	..	Hudson	40	..
Norwich	1 90	..	Catskill	40	..
Mystic	1 75	..	Saugerties	40	..
Stonington	1 75	..	Barrytown	40	..
Bristol	1 95	..	Rhinebeck	30	..
Newport	1 95	..	Poughkeepsie	25	..
Fall River	1 95	..	Fishkill Landing	20	..
Providence	2 00	..	Cold Spring	30	..
Dighton	2 00	..	West Point	30	..
Warren	2 00	..	Peekskill	40	..
Pawtucket	2 15	..	Haverstraw	45	..
Boston	2 10	..	Sing Sing	50	..
Troy	60	..	Nyack	50	..
West Troy	60	..	Tarrytown	50	..
Albany	55	..	Yonkers	55	..
New York	70	..			

From Elizabethport.

New York	$ 70@	— —	Portland	2 00@	2 10
Fall River	1 60	— —	Newburyport	2 30	— —
Newport	1 60	— —	New London	1 60	— —
Boston	1 75	— —	Pawtucket	2 00	— —
Norwich	1 80	— —	Taunton	1 25	— —
Providence	1 65	— —	New Haven	1 25	— —
Norwalk	1 25	— —	Portsmouth	2 25	— —
Middletown	1 70	— —	New Bedford	1 80	— —
Hudson	1 10	— —	Bridgeport	1 25	— —
Lynn	2 35	— —	Hartford	1 70	— —
Salem	2 00	2 10	Albany	1 10	— —

From Port Richmond, Philadelphia.

Reported by the Coal Exchange, Sept. 20.

Albany (& towing)	$1 70@	— —	Neponsett	$0 00@	.. ..
Alexandria	1 60	— —	Newark	— —	— —
Appanaug	2 00	— —	New Bedford	— —	— —
Bangor	— —	— —	Newburyport	2 40	— —
Baker's Landing	— —	— —	New Haven	2 20	— —
Bedford	— —	— —	New London	2 00	— —
Belfast	— —	— —	Newport	2 00	— —
Boston	2 00	2 20	Newport, R. I.	— —	— —
Bridgeport	2 00	— —	New York	1 70	1 75
Cambridgeport	2 25	— —	Norfolk	1 50	— —
Catskill (& tow)	2 00	— —	Norwalk	2 20	— —
Charleston, S. C.	2 50	— —	Norwich	2 05	— —
Charlestown	2 00	— —	Parkshell	— —	— —
Chelsea	2 15	— —	Pawtucket, & tow'g	2 25	— —
Commercial Point	— —	— —	Petersburg	2 00	— —
Cohasset Narrows	2 40	— —	Portland	2 00	— —
Davenport	— —	— —	Portsmouth, N. H.	2 50	— —
Dighton	— —	— —	Providence	2 00	— —
Dorchester Point	— —	— —	Poughkeepsie, & tug	1 75	— —
East Cambridge	2 50	— —	Quincy Point	— —	— —
East Greenwich	2 00	— —	Richmond	2 50	— —
Fall River	2 20	— —	Rockland	2 25	— —
Fredericksburg	— —	— —	Roxbury	2 50	— —
Gloucester	2 35	— —	Saco	— —	— —
Hartford	3 05	— —	Saugus	2 50	— —
Hudson	— —	— —	St. Johns (in gold)	— —	— —
Ipswich	3 00	— —	Salem	2 25	— —
Jamtown and tow	.. ..	— —	Savannah, Ga	2 50	— —
Kennebrook Point	— —	— —	Stamford	— —	— —
Lynn, and disc'ge	2 50	— —	Troy	— —	— —
Milton	2 50	— —	Washington, D. C.	1 50	— —
Medford	— —	— —	Weymouth't'g&pil'g	2 25	— —
Nantucket	— —	— —	Wilmington	2 00	— —

Vessels arrived 35; Cleared, 26; in Port, 15.

From Georgetown or Alexandria.

To Philadelphia	$2 00	— —	Boston	3 25	— —
New York	2 25	— —			

From Baltimore.

To Philadelphia	$1 75@	— —	Boston	2 75@	— —
New York	2 25	— —			

FOREIGN MARKET REVIEW.

Weekly Metal Report.

London, E. C., September 7, 1866.

The improved feeling in the Metal market reported last week has not been fully maintained. There is more desire to realise, while buyers are not quite so eager, the reduction in the rate of discount to 5 per cent. having been without influence on prices.

IRON.—The reports from Wales and Staffordshire are satisfactory. Orders, though not plentiful, are coming in gradually. Scotch Pig has steadily advanced to 55s. 6d. cash.

COPPER.—The market is a little unsettled through the action of the smelters, some having declared an official advance, while others adhere to official quotations, without, however, taking orders at the price. On the whole, prices are well maintained. For Burra, £90; Wallaroo, £89; and Kapunda £94 is asked. Chili slab, £81 and £82.

TIN.—Straits is easier, and business reported at £82 and at £81 cash. Banca £84@83. English maintained at official quotations.

TIN PLATES without change in value.

LEAD continues to maintain former quotations.

SPELTER.—The market has been firm, but the amount of business of no importance. Common brands in London, £20 5s. to £20 10s.; specials here, £20 15s.; in outports from £20 15s. to £21; W. H., £21 7s. 6d.

VON DADELSZEN & NORTH.

NEW YORK METAL MARKET.

(CORRECTED WEEKLY.)

COPPER	Ingot..Lake Superior, ₩ lb., cash	.. 31	.. 31½
	Baltimore	.. 32	.. ..
	Fig Chili	.. ..	.. ..
	Bolts	.. 43	.. ..
	Braziers	.. 42	.. 43
	Sheathing	45	.. ..
	Yellow metal	.. 33	.. ..
IRON	Pig.....No. 1 Scotch, ₩ ton	45 00	49 00
	No. 1 American	48 00	50 00
	No. 2 "	45 00	46 00
	No. 2 Charcoal	.. ..	.. ..
	Bar.....Swedish, ordinary sizes	170 00	.. ..
	Amer. and Eng refined	125 00	145 00
	" " common	115 00	120 00
	Rails, American currency	.. ..	.. ..
	" English gold	.. ..	.. ..
	Horse shoe iron	150 00	160 00
	Rods 5-8@3-16rd. and sq	130 50	185 00
	Band	155 00	.. ..
	Nail rods, 5-8 and 3-16	122 50	185 00
	Hoops	160 00	225 00
	Sheets, Russian, ₩ lb	.. 28	.. 30
	" English "	.. 6¼	.. 9
	" American "	.. 25	.. 25¾
	Boiler Plates, English	.. ..	.. ..
	" American	.. ..	.. ..
STEEL	Best cast in bars, war	.. 26	.. ..
	Best sheet cast, "	.. 26	.. ..
	Best cast circular saw plates 46 in	.. 32	.. ..
	Double shear steel, war	.. 26	.. ..
	Single " " "	.. 23	.. ..
	Montague & Co. C. S., in bars	.. 23	.. ..
	Round machinery cast	.. 17	.. ..
	Best German	.. 17	.. ..
	Government German	.. 14	.. ..
	Eagle German	.. 16	.. ..
	(L.) Blister, war	.. 22	.. ..
	W. Jessop & Sons, blister, war	.. 20	.. ..
	Double refined	.. 28	.. ..
	Stone Axe shapes	.. 28	.. ..
	Common blister	.. 16	.. ..
	2d quality sheet	.. 23	.. ..
	3d quality sheet	.. 20	.. ..
LEAD	.....American, per 100 lbs	.. ..	.. ..
	German.....Gold	6 80	7 00
	Spanish "	6 87½	7 00
	English "	6 87½	7 25½
	Bar, per 100 lbs	10 50	.. ..
	Pipe and sheet	10 70	.. ..
TIN	.....Banca Gov., per 100 lbs. gold	24½	.. ..
	Straits	22	.. ..
	English	21¾	.. ..
TIN PLATES	.....IC 10-14 prime charcoal	15 50	.. ..
	IX 10-14 " "	18 50	.. ..
	IC 12-12 " "	16 00	.. ..
	IX 12-12 " "	19 00	.. ..
	IC 14-20 " "	16 50	.. ..
	IX 14-20 " "	19 50	.. ..
	IC 14-20 Roofing ch. 1st	14 75	.. ..
	IC 14-20 " " 2d	13 75	.. ..
	IC 14-20 " Coke	12 25	.. ..
	IC 10-14 Coke	12 00	14 50
SPELTER	.....Lehigh, per lb., currency	.. 11½	.. ..
	Foreign " gold	.. 6⅝	.. ..
ZINC	.....Mussulman & Amer	.. 13½	.. ..
SOLDER	.....No. 1	.. 24	.. ..
	No. 2	.. 22	.. ..
QUICKSILVER	.....per flask	.. ..	.. ..

SAN FRANCISCO STOCK MARKET.

Latest by Telegraph.

SAN FRANCISCO, Sept. 12.

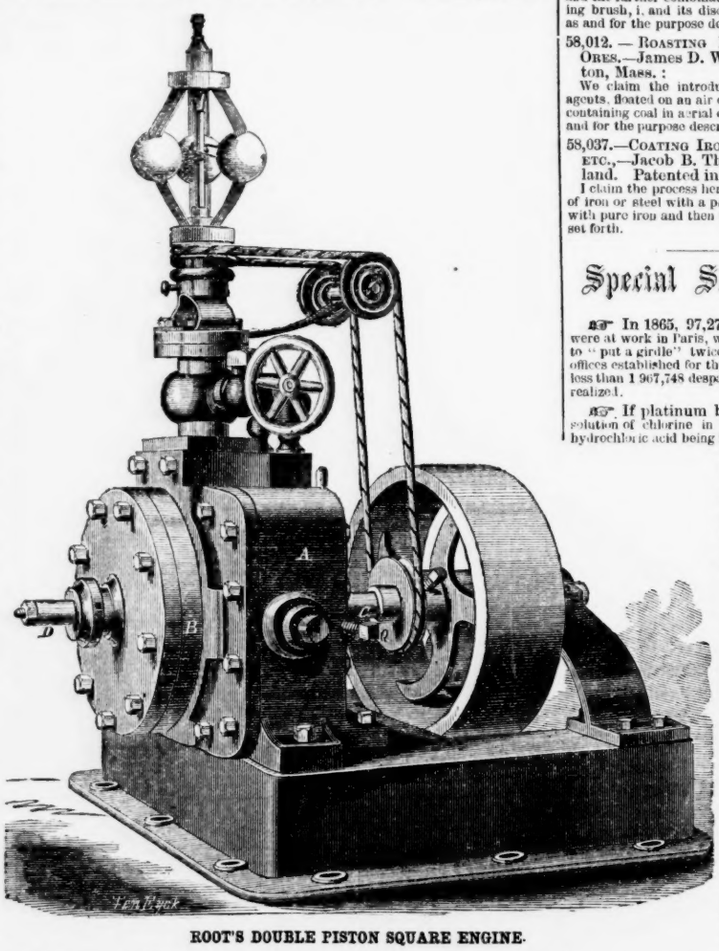
Name.	Bid per foot.	Name.	Bid per foot.
Gould & Curry	650	Crown Point	880
Savage	1110	Yellow Jacket	730
Cholar-Potosi	135	Belcher	120
Ophir	240	Alpha	....
Hale and Norcross	1090	Imperial per share	90
Cal. Steam Navigation Co.	70	Cal. State Telegraph Co	33½

Attempted Ascent of Mount Baker.

We learn from the Victoria (V. J.) *Colonist* (Aug. 7th,) of the return of Dr. Brown and Mr. E. T. Coleman of that city, after having failed to accomplish their intention of ascending Mount Baker. They inform us that they proceeded up the Skadget River, with Judge Darwin, of Washington Territory, and accompanied by Indians, a distance of about 40 miles, when they reached the confluence of a stream, called the White Stone or Tukullum River, which flows from the base of the mountain. It became necessary here to procure guides, but the tribe of Indians who reside there, named the Koma, numbering some 60 strong, became apprehensive that the white men were making an attempt to set foot on their soil, and declined to let them proceed. Finding remonstrance useless, the party retraced their steps. The country in the vicinity of the mountain, on that side appears to be very impracticable; on the Whatcom side, however, it is said that there is a practicable approach to the mountain by water, where the natives will offer no molestation, and by this route says the *Colonist* Mr. Coleman with the Hon. Mr. Eldridge, and probably other gentlemen from the opposite side, purpose making a second attempt to ascend to the crater.

ROOT'S PATENT STEAM ENGINE.

We present on this page, for the benefit of our mining friends, an excellent illustration of Root's Patent Double Piston Square Engine. A is the Piston Chamber; B the Steam or Valve Chest; C the Main or Crank Shaft, extending through the front head to D, and operating the Slide Valve. The Piston Chamber consists of an oblong parallel sided Box, containing two Pistons of like form, working one within and at right angles with the other, and both transmitting motion to a single Crank attached directly to the inner Piston, in such manner that when either Piston is passing the "dead point," the other is exerting its maximum force. One Slide Valve serves Steam and Exhaust Ports for both Pistons with an epicycloidol motion. The patentee claims that this is a very simple Double Engine of great capacity and power, with small wearing surfaces and the least degree of friction as compared with any other Engine in use, consequently not subject to any unusual wear or liable to get out of order. In motion it is regular and free, and can be reversed instantly. We learn that it has been used successfully for nearly three years for all sorts of work. Its appearance is novel in the extreme, and were it not for the Pickering Governor by which it is surmounted, very few persons would take it to be a steam engine. It may be seen in operation at 155 Duane street, New York city.



ROOT'S DOUBLE PISTON SQUARE ENGINE.

Remarkable Foot Traveller.

The Colorado *News* speaks of Charles Fred. Schoefer, who has a deformed spine, is only four feet six inches high, thirty years of age, a native of Hesse Cassel, who had just arrived on foot from the East, at Denver, on his way to Salt Lake, California and Australia. He has travelled 75,000 miles in Europe, Asia and America, mostly on foot, is very intelligent, intends to write a book, and has passports and recommendations from public men in *thirty different languages*.

Patent Claims.

Interesting to Miners, Millmen, Metallurgists, Oil-Men and Others.

57,866.—TANK FOR PETROLEUM.—M. C. Church, Parkersburg, West Va., and Edward H. Knight, Washington, D. C.:

We claim a tank for the transportation or storage of petroleum or other liquids provided with an auxiliary chamber and connecting-pipe, operating substantially as described.

57,897.—PUMP.—A. S. Hanson, Milan, Mich.:

I claim the combination with the main cylinder or stalk, A, of the pump, divided into two chambers, C and D, of the cylinders, E and L, respectively having valves, F, and G, and M and N, and pistons, H and O, connected to a common handle, K, when all arranged together and operating substantially in the manner described and for the purpose specified.

57,892.—FURNACE FOR CALCINING GYPSUM.—Freeman Godfrey, Grand Rapips, Mich.:

I claim, 1st. In an apparatus for calcining gypsum, one, two, or more rotary boilers, substantially as and for the purpose specified.

2d. A distributor, B2, arranged and operating substancially as described.

3. A spiral conveyor, b', located within the heater, and operating substancially as described.

4th, A cooler, G, constructed, arranged, and operating substantially as described.

5. The combination and arrangement of the fire-arch, A, heaters, B, B', rings or collars, a, friction rollers, g, spiders, e, and driving-shafts, D, D, as and for the purpose specified.

57,969.—REDUCING METALLIC OXYDS AND REFINING THE METAL RESULTING THEREFROM.—Jacob Reese, Pittsburg, Pa.:

I claim, 1st, The manufacture of iron or other metals from their ores in the furnace, in which the ore, having been fused with the aid of a blast of atmospheric air, is then reduced to its base with a hydro-carbon.

2d, The process of fusing iron ores and other metallic oxyds by the aid of a blast of atmospheric air in a furnace and the waste heat from the reducing chamber, without the use of other fuel, or with so little fuel as not to deoxydize the ore in melting, and running the melted ore immediately into a receptacle below the influence of the atmospheric blast in which it is deoxydized by the injection of any hydro-carbon into the molten mass, in the manner substantially as herein-before described.

3d, The use of an atmospheric blast for fusing metallic oxyds, in combination with the use of hydrogen or carbon or a hydro-carbon for the reduction of the melted oxyd to its metallic base, substantially as herein-before described.

4th, The use of the compound of water or steam and oil in a liquid or vaporous condition, in the proportions herein-before described, as a new material for the refining of melting metal.

5th, Combining with a cupola or melting furnace one or more reducing chambers, placed for the reception of the melted ore below the point at which the atmospheric blast is introduced into the furnace, for the purpose of running the melted ore directly from the furnace into a reducing chamber, in which it may be deoxydized, carbonized, and refined, away from the influence of the atmospheric blast, substantially as herein-before described.

6th, Connecting the reducing chamber or chambers to the bottom of a cupola, or melting furnace, by a hinge or pivot, so that they may be swung away from the furnace without impairing their connection with the vessel containing the reducing agent.

7th, The use of the hollow shaft, c, in combination with the reducing chamber, B, and connecting passage, I, for the purpose of hanging the reducer to the cupola and allowing of the introduction into the reducing chamber of the liquid or gaseous agents, for the reduction of metallic oxyds.

8th, The combination of the water-tank, E, with one or more tanks for holding the liquid deoxydizing or carbureting agents, for the purpose of applying the pressure of live steam or of a head of water to force the deoxydizing agents into the reducing chamber, substancially as herein-before described.

9th, Constructing the tuyere forming the communication between the interior of the reducing chamber and the cell below it of fire-clay or other refractory material, in combination with a tubular metallic screw-stem projecting therefrom, substantially as and for the purpose herein-before set forth.

10th, The use of lime or oxyd or calcium as a lining for reducers or furnaces wherein ores or metals are decomposed or refined.

57,982.—METHOD OF REMOVING OBSTRUCTIONS FROM OIL WELLS.—W. C. Sherwood, Buffalo, N. Y.:

I claim the method of loosening and removing or wholly destroying such obstructing tools, tubings, or other obstructions which may be lodged in artesian and other wells, by the application and use of sulphuric acid and other equivalent acids substantially as herein set forth.

58,010.—AMALGAMATOR.—James D. Whelpley and Jacob J. Storer, Boston, Mass.:

We claim, 1st, An amalgamator or separator consisting of a hollow revolving cylinder, C, partially closed at the ends by centrally pierced disks, B, and revolved at a rate sufficiently high to more than overcome the influence of terrestrial gravity on matters placed within it, substantially as described.

2d, The arrangement of the supply-pipe, P, and discharge-pipe, P', in connection with a revolving cylinder, C, carrying fluid, and a tank, T, to secure the supply and discharge of fluid or pulp, substantially as described and for the purpose stated.

58,011.—MACHINES FOR CLEANING AND BRIGHTENING PARTICLES OF PRECIOUS METALS.—James D. Whelpley and Jacob J. Storer, Boston, Mass.:

We claim, 1st, Brightening metallic particles in finely-pulverized and desulphurized ores when such brightening is effected on the principle of mutual attrition in a cylinder, A, alternately closed during the brightening process, and opened to set free the charge by means of valve, d, in the exhaust-pipe, c, intending to claim for this end the principle of alternately closing the cylinder, so as to do the work in a close cylinder, as well as the combination of cylinder, A, valve, d, and exhaust-pipe, C, for the purpose and substantially as described.

2d, The combination with feed-hopper, B, of a fine grating to prevent the passage of any but very fine dust into the cylinder, and the further combination with said feed-hopper of the revolving brush, i, and its discharging-pin, K, operating substantially as and for the purpose described.

58,012.—ROASTING DESULPHURIZING, AND SMELTING ORES.—James D. Whelpley and Jacob J. Storer, Boston, Mass.:

We claim the introduction of finely-powdered chemical reagents, floated on an air or steam blast into an atmosphere of heat containing coal in aerial or air borne combustion, substantially as and for the purpose described.

58,037.—COATING IRON AND STEEL WITH GOLD, SILVER, ETC.,—Jacob B. Thompson, Middlesex county, England. Patented in England, October 7, 1865:

I claim the process herein-before described of coating an article of iron or steel with a precious metal, by first coating the article with pure iron and then with the precious metal, substantially as set forth.

Special Scientific Brevities.

☞ In 1865, 97,278 kilometres of telegraphic wires were at work in Paris, which makes a length of wire sufficient to "put a girdle" twice round the earth. Six hundred and ten offices established for the working of these lines sent forward not less than 1 967,748 despatches, by which a sum of 6,123,272f. was realized.

☞ If platinum black is introduced into a strong solution of chlorine in water, the latter will be decomposed, hydrochloric acid being formed and oxygen evolved. Schonbein supposes that the platinum decomposes, the solution of chlorine being a compound of *muriun* acid and oxygen, the latter being evolved because of its becoming incapible of remaining in combination on account of its ceasing to be ozone. This metal has the same effect; it is certain, on azonized oxygen at a temperature of 302° Fahrenheit, rendering it incapable of acting iodized starch paper.

☞ A new heat generator adapted to the heating of railway carriages, consists of a cone of wood covered with hemp, within a hollow cone of copper, both inclosed in a metallic vessel, through which air heated by motion is conveyed into the carriage. It is to be situated outside, and the motion will be given to the wooden cone by the axels of the carriage. The air becomes heated from the motion of the cone. This heat generator is in actual use in Prussia; turned by a force equal to one-twentieth of a horse-power, in ten minutes the air escaping from the apparatus had a temperature of 7.°

☞ An apparatus has been invented to prevent the incrustation of boilers, which is certified to have perfectly succeeded. It proceeds upon the principle of the inversion of the galvanoplastic process, in which metals are made to adhere on proper surfaces, by deposit from the solution. In this arrangement the galvanic effect is repellant, and prevents the adhesion of particles.

☞ An official report has just been made by Colonel Shaffner of a series of experiments conducted by him at Washington, for demonstrating the use of nitroleum in the explosion of mines. The results, it is reported, fully confirm the fact that the explosive qualities of nitroleum are far in advance of gunpowder. The experiments are said to demonstrate that nitroleum can, with ordinary precautions, be handled and employed without greater danger than is common to gunpowder, and for blasting operations, at least, presents undoubted advantages.

☞ M. Gaillard has lately brought before the Academy of Sciences, Paris, a new process for manufacturing the common lucifer match. The wooden slips are first plunged into phosphorus, and afterward into sulphur, thus reversing the ordinary mode of preparation. This process is attended with several advantages. The matches are less liable to become spoiled by damp, and the sulphur being quite insoluble in water, there is less chance of the poisoning of food, either through negligence or design, while the hardness of the sulphur coating, by requiring slightly more friction for the ignition of the match, diminishes the risk of fire from accidental attrition, etc. A higher temperature being also required for their ignition, they are less liable to spontaneous combustion.

☞ In proof of the probable durability, and even improvement of the Atlantic telegraph, it is stated that the line which carries the messages between England and the Continent has been doing duty for fifteen years, and can be worked somewhat quicker than at first.

☞ During the operation of smelting zinc, a large portion of the metal escapes in the form of vapor, consisting of finely-divided metallic zinc. This vapor is known by the workmen as "zinc fume." When it has cooled it is deposited as fine dust on every part of the smelting works. A continental manufacturer has recently proposed to utilize this substance, by grinding it with varnish, and applying it to iron, as a preservative against rust. The principal of the operation, it will be seen, is the same as that of galvanizing, but the coating of metallic zinc is applied in a different manner.

☞ As a substitute for lime in the Drummond Light, a piece of the chloride of magnesia is placed upon a support of retort carbon in the oxhydroga flame. The chloride decomposes and leaves a spongy oxide, which is raised to incandescence, and gives a very brilliant light, which is equal to the lime-light in brilliancy, and exceeds it in active power.

☞ The greatest elevation yet attained by man without leaving the surface in a balloon, is 19,000 feet. M. Bousingault and Colonel Hall ascended Chimboraxo to that height.

☞ Oaken barrels may be prevented from coloring spirit by dissolving one part of ammonia alum and two parts of sulphate of iron in one hundred paris. Well wash the casks with this solution, boiling hot, and allow them to stand twenty-four

hours. Then rinse out the casks well, dry them, and finally give them a washing with a thin solution of silicate of soda.

☞ Schrother has found that the light absorbed and re-emitted by bodies which are fluorescent under exposure to the magnesium light, have no photographic power, but are purely luminous.

All Sorts.

☞ Bayard Taylor, while recently camping out in the Rocky Mountains, Colorado, experienced three distinct electric shocks; probably, he says, from the fact that he was insulated by the India-rubber cloth upon which he was lying, and then touched the earth with his hand. On the snowy ranges persons are sometimes so charged, that there are sparks and crackling sounds at every movement of their bodies. Men unacquainted with the phenomenon imagine that bees have gotten into their hair and that rattlesnakes are at their heels. Many strange stories are told of the effect of the fluid, which seems to manifest itself in an eccentric but not a dangerous form.

☞ The cup of tea we drink, according to chemical analysis, contains volatile oil, chlorophyl, wax, resin, gum, tannin, thein, extractine, apotheme, albumen, sulphur, phosphorus, chloride of potassium, oxyd of iron, carbonate, sulphate, and phosphate of lime, carbonate of magnesia, manganese, and silica —twenty different articles.

☞ Mr. Lewis Gidley has lately translated into Latin the whole of Poe s "Raven," in a measure which is described as being a five-line stanza of trochaic tetrameter with a trochaic dimeter-hypercatalectic.

☞ Blondin is said to have been one of the first applicants to the directors of the Atlantic Telegraph Company. He wanted to have the cable raised on poles at either end so that he might walk over.

☞ "Marrien for love may be a little risky, but it iz so honest that God kan't help but smile on it."

☞ A premium of $20,000 is offered for a history of Peru.

☞ "What is the difference," gravely propounded a young wretch, "between this 'ere novel of Mr. Dickenses, and the hiring of a young woman as a wet nurse? D'ye give it up? Why, one is a Tale of Two Cities, and the other is the sale of two——."

☞ The receipts of the Metropolitan, (London) Underground Railway for the first six months of the present year, were £102,947, in sums from sixpence to one penny, received from upwards of ten millions of passengers! The overground trafic on the same route remains about the same as before the opening of the underground railway in 1863.

☞ The weight of type always in use and in stock at the works of one of the chief printers in London is two hundred and fifty tons.

☞ A miserly old farmer who had lost one of his best hands in the midst of haymaking, remarked to the sexton, as he was filling up the grave, "It's a sad thing to lose a good mower at a time like this; but after all, poor Tom was a great eater.

☞ The piles of old London bridge, which were driven 500 years ago, when examined in 1845 were found to be little decayed. They are principally of elm.

☞ Make not thy enemy the physician, nor thy adversary the cook.

Mineral and other On-dits.

☞ On the 10th ult. 20,000 ounces of gold, valued at $400,000, were deposited in the Branch Mint at San Francisco, the largest amount ever received in a single day.

☞ The largest lump of gold we ever heard of being found in the Northern mines, says the Dalles *Mountaineer*, was taken out the other day at Olive creek. It weighed eighty-five pounds and had fifty pounds of pure gold.

☞ During the past few weeks numbers of families have left the iron and coal districts of South Wales for the United States; and, it is reported, this mania for emigration has taken such a permanent hold of the miners and iron-workers, that the exodus is expected to continue for some time, notwithstanding the improved prospects of the staple trades of the district.

☞ Quicksilver, in a pure state, has been found at Leech River, British Columbia. After one day's sluicing a company found one pound and a half in their boxes.

☞ One bed of the salt mines of Nevada is reported to cover 52,930 acres, yielding 2,000,000 bushels annually of salt, ninety-five per cent. fine. No bottom to this bed has yet been discovered.

☞ A tun of coal yields about 10,000 cubic feet of gas, while one cord of wood produces about 98,000 feet.

☞ A ball of iron weighing 1,000 lbs. at the level of the sea, would be perceived to have lost two pounds of its weight if taken to the top of a mountain four miles high.

☞ It is stated that a mass of the best cannel coal of the size of a whale, contains more oil than there is in that fish.

☞ Professor Able found that hardened steel wire dissolved in hydrochloric acid was without residue, whereas the same steel in the softened state yielded by such action a dark flocculent carbonaceous residue.

☞ Some very curious speculations have lately been put forward by M. Dufour, concerning the increase in size of the earth. Will it be believed that our globe is increasing in size year by year, owing to the quantity of meteors (falling stars) which are projected into it from the regions of space? M Dufour has made calculations showing that the earth sustains an annual increase equal to 114,400,000ths of its weight. It appears that nearly two cubic metres of meteoric dust falls upon every acre of the earth's surface in the course of a single year. It is stated that in some parts of England this meteoric dust may be found in accumulations nearly a foot deep.

Michigan Copper Mining.

The record of operations in copper stocks during the last few weeks, as published in our stock report, can hardly have failed to attract general attention. It indicates a degree of activity which has not had a recent parallel. The speculative fever which not long ago afflicted certain land companies, seems to have attacked the coppers, and the daily sales of certain stocks show startling aggregates. We are inclined to regard this movement, somewhat feverish though it be, as a not altogether unhealthy symptom. It evidences that capitalists are coming to a just appreciation of the mineral wealth of the Lake Superior region, and that money which has sought investment heretofore in the gossamer schemes known as "fancy" stocks, which abound in our market, is being diverted to more tangible and sensible objects. No man who has enjoyed fair opportunities of judging, can doubt the existence in the Lake Superior country of immense deposits of copper and other valuable minerals; and common sense teaches that money can be made in working them. But the bane of copper mining has been the organization of "fancies,"—companies which have no substantial basis, and are projected solely for the purpose of speculation. The fate of many of these enterprises has brought copper stocks into disrepute—the good suffering with the bad. Present appearances justify the hope that a better understanding of the merits of copper mining may be arrived at, and that mines which have a solid value will attract the confidence and investments of monied men. The recent great activity in Quincy, Hancock and Pewabic stocks, is an evidence of change of sentiment.—*Boston Com. Bulletin.*

"Good Luck" and "Bad Luck."

The "luck" of man, says the *Oregon Statesman*, is varied on this wonderful coast. There are now in this city several men from the mines, who are about to take their departure for the East. One of these has been on the coast but fifteen months, and he takes with him about $20,000, and a relative who has spent fifteen years on the coast, and is not the possessor of $14. We had a conversation with the gentlemen, and having known both of them previously, can vouch that their statements are correct. The "lucky" party left New York in February, 1865, and after landing at San Francisco and hearing the flattering accounts from Oregon, he came on here, and worked his passage to the John Day regions. He had never been in a mining camp, and knew nothing of the process of obtaining the gold, but he had inculcated in him by an economical and widowed mother, one of the most "refined" methods of *saving* it, when dug out, that has ever been put to a practical test. By simply paying strict attention to business, and discountenancing the "places of amusement" to be found in the mines, he has been rewarded in the short space of one year with a snug competency. On the other hand, the "unlucky one has been a miner since 1852, since which time he was part owner in a rich placer claim in California. But he took the Washoe fever, and left his diggings for a better strike, and continued to roll about like a stone in an avalanche, until he brought up at Idaho City in 1864. Here by dint of perseverance and hard work, he managed to accumulate about $2,000, which was invested in liquors, cigars, etc., with which stock he expected to get a good living without so much hard work, but in this he failed, and hearing of his friend at John Day, he set out to find him, and on his charity is now going back to the "old folks at home" Our chief object in making note of these circumstances is to show that there are good opportunities enough in the country for energetic, straight-forward men, with or without capital, if they have sagacity to take advantage of the moment, and be contented with hard work.

WHAT IS SAID OF THE "JOURNAL OF MINING" BY THE PRESS.

From the Saginaw (Mich.) Daily Enterprise, Sept. 6.

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From the Nevada (Cal.) Daily Transcript, Aug. 10.

We have received several copies of the AMERICAN JOURNAL OF MINING, an illustrated paper of sixteen pages, devoted to the mineral and metallic resources of the American continent, edited in New York by George F. Dawson, formerly of this city. As the columns of the JOURNAL draw largely upon the prolific resources of the Pacific Coast, it is a subject of peculiar interest to the people of this region. It seems to have reliable sources of information from all mining localities of any note throughout the entire continent, making it a work of great value, especially to parties interested in the development of our metalliferous wealth.

From the Portage Lake (Mich.) Gazette, Aug. 2.

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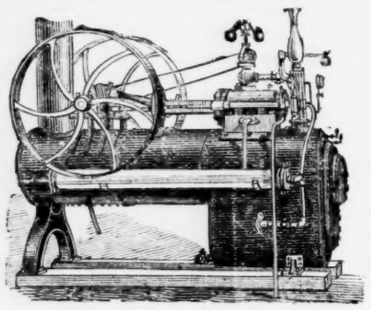

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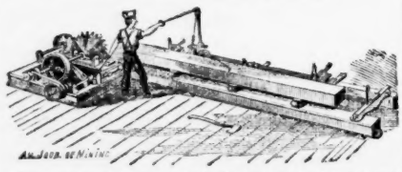

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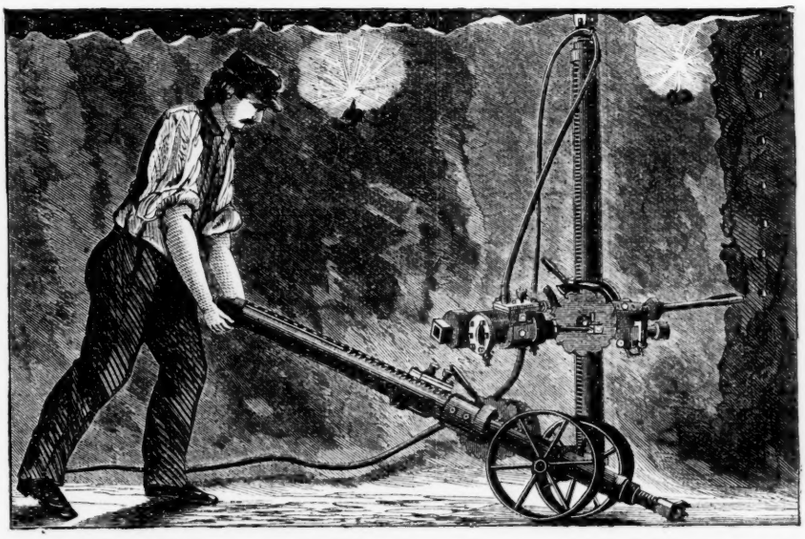

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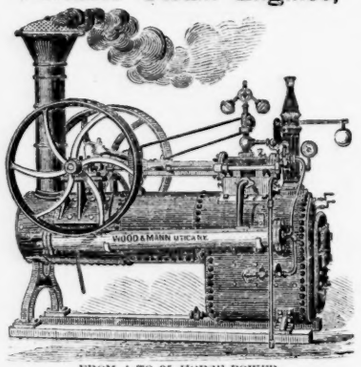

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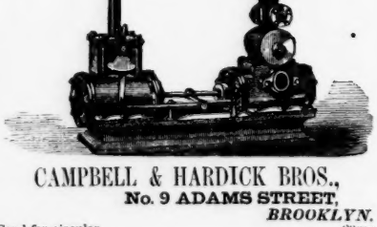

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